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INDIA METEOROLOGICAL DEPARTMENT.

METEOROLOGICAL ORGANISATION
FOR
AIRMEN.

(M. O. A. Pamphlet.)

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INDIA METEOROLOGICAL DEPARTMENT.

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Meteorological Organisation for Airmen.

I.—Area of responsibility and nature of Organisation.

1. The India Meteorological Department provides a weather service for airmen over the eastern half of the Persian Gulf, the whole of Baluchistan, India and Burma. The existing organisation for the supply of weather reports and forecasts admittedly falls short of the standards recommended by the International Convention for Air Navigation, particularly in South India, but every attempt is made to maintain it as efficiently as existing facilities allow. The service includes supply of weather forecasts, upper wind and low cloud data and surface observations. The officers of the India Meteorological Department, though authorised to supply weather information, are not expected to give advice regarding the suitability or otherwise of the weather for flying, of the condition of the aerodrome or the seaplane base for landing, or of alternative routes between stations. Details of the service provided are described in this pamphlet; they apply generally to civil aviation over the whole country as well as to Royal Air Force aeroplanes over regions served by the civil forecasting centres, but do not apply strictly to Royal Air Force flights over Baluchistan, Sind, the North-West Frontier Province and the Punjab.

Classification of meteorological stations.

2. The following classes of offices and observatories aid in the provision of weather reports for airmen :—

(i) *Forecasting centres* under the charge of meteorologists, where weather observations are collected by telegrams from a number of observing stations and ships at sea to form the basis of weather reports and forecasts. For civil aircraft there are three such centres, located at Karachi, Calcutta and Poona, while for military aircraft there are two forecasting centres at Quetta* and Peshawar. For details regarding areas of responsibility, etc., of Karachi, Calcutta and Poona forecasting centres, reference may be made to *Table I* (page 12) and the *Map* facing this page. The areas of responsibility of Peshawar and Quetta* forecasting centres have been indicated in *Table I*.

(ii) *Surface observatories*, numbering about 330 and classified into various classes, according to their instrumental equipment and to the frequency of observations taken. Most of them report to one or more of the forecasting centres by telegram.

(iii) *Pilot balloon observatories*, numbering 38, which supply information regarding upper winds and low clouds. For details see *Table II* (page 16).

(iv) *Current weather observatories* which can supply information about local weather and ground winds at short notice or at times when weather is adverse to flying. For details see *Table III* (page 24).

Classification of weather messages.

3. The meteorological messages supplied to and by airmen are classified as follows :—

(i) NEWSMET *messages*.—Weather reports and forecasts in plain language issued regularly for airmen at routine hours are designated NEWSMET messages and begin with the code word NEWSMET. The names of the end stations of the section of the route to which the NEWSMET applies and the date and time of issue (in G. M. T.) follow this code word, *e.g.*, a typical message relating to the Karachi-Jodhpur section of the route begins "NEWSMET Karachi-Jodhpur 20 August 1530 G. M. T..........". The forecasting centres at Karachi and Calcutta prepare two synoptic charts a day based on observations taken at 8 hours L. T. and 17 hours I. S. T.* and hence issue two NEWSMETs a day. The forecasting centre at Poona prepares one chart daily based on 8 hours L. T. observations and therefore can issue only one NEWSMET daily for routes in Southern India. Detailed specifications of NEWSMET messages are given in *Appendix I*. As the organisation in respect of the Bushire/Bahrein-Gwadur and Rangoon-Victoria Point sections of the air route is unavoidably inadequate, only very general inferences are issued for these regions.

---

* The forecasting centre at Quetta has been temporarily transferred to Karachi.

(ii) STORMET *messages.*—Occasionally, at times of threatening or stormy weather in the Bay of Bengal and the Arabian Sea, additional weather charts are prepared at the forecasting centres. Whenever considered desirable after study of these charts, special brief weather reports may be issued, *en clair* as cautionary messages by W/T for the benefit of airmen. These messages are designated STORMET messages and begin with the code word STORMET followed by the names of the end stations of the section of the route to which the message refers and the date and time of issue (G. M. T.), *e.g.*, "STORMET Calcutta-Akyab 20 September 0430 G. M. T..............".

(iii) PILOT *messages.*—These contain information regarding direction and velocity of upper winds up to a height of 4,000 metres above sea level and are coded in the usual international form (see *Appendix II*). The pilot balloon stations, as a rule, release balloons twice daily once in the morning and once in the afternoon with the exception of a few stations in northern India which take three flights a day, and a few stations in south India which let off one balloon daily in the morning (see *Table II*, page 16).

(iv) In response to special requests for height of low cloud if made by aircraft in flight in the "Q Code" the information will be supplied by pilot balloon stations (see "QBB" in *Appendix VII*, page 59).

(v) MET *reports* are brief coded messages, containing local weather observations taken at Current Weather Observatories at fixed routine hours, which, on the trans-India air route, generally coincide with the routine periods of watch of aeronautical W/T stations. (For code and specifications see *Appendix II*. The list of current weather observatories on the trans-India air route is given in *Table III*, page 24.)

(vi) SPEMET *reports* contain, in the same code as MET reports, local weather observations made at current weather observatories at any non-routine time on special request by aircraft in flight.

(vii) DANMET *reports* are coded cautionary messages, containing information regarding weather phenomena dangerous or adverse to aviation and are sent voluntarily by current weather observers. (For code, etc., see *Appendix II*; for stations whence these reports are issued see *Table III*, page 24).

(viii) IMPMET *reports* are coded messages sent voluntarily by current weather observers about improvements in adverse weather conditions previously reported by DANMET reports. Each DANMET message is generally followed by an IMPMET message as soon as the weather improves appreciably. (For code see *Appendix II*).

---

*The routine times of observation in Mekran, Iran and the Persian Gulf are 0400 and 1200 G. M. T.

(ix) RECTIF *reports* (beginning with indications like RECTIF NEWSMET, RECTIF PILOT, etc.) are issued occasionally either to correct errors in, or supplement, any of the above-mentioned reports. When issued by wireless they go out as CQ messages. The distribution and disposal of RECTIF reports are always identical with those of the messages to which they are corrections or supplements.

(x) AERMET *reports* are meteorological reports from aircraft in flight to the nearest controlled aerodrome when weather conditions are difficult for flying (for code etc. see *Appendix VIII*).

II.—Procedure for obtaining weather reports and forecasts.

(*a*) *On the trans-India air route between Karachi and Victoria Point.*

4. On this route the issue of different kinds of meteorological messages by W/T to all main aerodromes has been placed on a routine basis and airmen are able to refer to the latest reports on the Weather Notice Boards at aerodromes or to get reports by W/T in the air. There is in general no need to enter into any special arrangements with forecasting centres. The routine arrangements are detailed in *Tables IV* to *IX* and *XII*, while for fuller information on any point paragraphs 11 to 44 below as well as the *Appendices* may be referred to. Meteorological Officers at forecasting centres will always be glad to explain the latest available weather charts and discuss the weather situation with pilots at the Meteorological Office during office hours, should the pilots so desire.

(*b*) *On other routes.*

5. On other routes airmen should apply to a Meteorological Office for such forecasts and weather reports as may be required. Application should be made to the Meteorologist at Karachi, Calcutta or Poona according to region of flight (see *Table I*, page 12, and *Map* facing page 1); it should preferably be sent at least 18 hours * before the forecast is required and it should state clearly :—

(*a*) The date, time, place of commencement and destination of intended flight ;

(*b*) Route by which the airman intends to fly, with information regarding landing at intermediate places if any, along the route ;

(*c*) The address to which the forecast should be sent and the time by which it should reach the airman ;

(*d*) The mode of supply, *i.e.*, whether by telegram, W/T or telephone, etc.

A typical requisition telegram for a forecast is given below :—

Example.—" Request forecast for flight Bellary-Bombay commencing 7 hours fourteenth April morning stop Wire Rao care Postmaster Bellary to reach by 22 hours thirteenth ".

In order to ensure timely delivery of these telegrams pilots are advised to warn those concerned at the receiving end that such messages are to be expected and how they are to be delivered.

If the station of starting has a forecasting centre, it is advisable for the airman to obtain the forecast in person during office hours from the Meteorological Office, where he will also have facilities for consulting the weather charts and discussing the weather situation.

---

* See paragraph 7 below.

6. It may sometimes happen that the route expected to be covered on a flying day lies over the *areas of responsibility of two or more forecasting centres*. A requisition giving the details enumerated in clauses (*a*), (*b*), (*c*) and (*d*) of paragraph 5 above should then be sent to *each* forecasting centre for the different portions of the route served by each of the centres. For a *non-stop flight* over a route lying within the jurisdictions of different forecasting centres, if the aviator makes a special request to the nearest forecasting centre, that centre may arrange the issue of a consolidated forecast for the whole route, after obtaining, if necessary, forecasts for portions of the route outside its area of responsibility from other forecasting centres.

Urgent Requests.

7. The 18 hours' notice stipulated above does not signify that urgent requests for forecasts remain unattended for 18 hours; all urgent requests received within office hours at forecasting centres are attended to immediately. It is however to the airman's own advantage to give at least 18 hours' notice whenever he can, because the forecaster is thus enabled to study the weather situation with reference to the particular needs of the airman and call for special observations, whenever the weather conditions demand them.

8. When a weather report or forecast is required very urgently at night during the closed hours of the meteorological office concerned, it is advisable to make the request by telephone trunk call, and not by telegram.

The telephones to be called are as follows:—

Area for which weather report is required.	Telephone to be called up.	
	Station.	Telephone No.
Southern and Central India	Poona . .	690
Northwest India and United Provinces .	Karachi . .	5125 (extension).
Northeast India and Burma . . .	Calcutta . .	Alipore 203

9. Pilot balloon observatories (see *Table II*) are authorised to supply on request the latest information available about local upper winds and cloud heights to local enquirers. Excepting forecasts, which are in plain language, other messages are generally supplied in coded form.

10. For regular air services, schedules of supply of weather reports are prepared by the Meteorological Offices to suit the time-tables and needs of the services; in the event of delays or changes in the schedule of operation of the services, the Meteorologist concerned should be informed so as to enable him to change the time or date of issue of forecasts.

III.—Arrangements on the trans-India air route between Karachi and Victoria Point.

(*a*) *Routine forecasts* : *NEWSMET messages*.

11. NEWSMET messages are defined in para. 3(i) above. They are prepared by the Meteorologists at Karachi and Calcutta twice daily and are ready for issue by 1300 and 2100 I. S. T. (0730 and 1530 G. M. T.). The evening NEWSMET that is issued at night covers a period of 16 hours, *i.e.*, from 22

I. S. T. to 14 I. S. T. of the next day, and the noon NEWSMET covers a period of 8 hours, *i.e.*, from 14 I. S. T. to 22 I. S. T. These messages contain information about past and present weather as well as the weather expected during the next 16 hours and 8 hours respectively. Detailed specifications of NEWSMET messages are given in *Appendix I.*

12. The meteorological offices at Karachi and Calcutta transmit the NEWSMET messages to the respective wireless stations as soon as these are ready. Further distribution and disposal of these messages as also of RECTIF NEWSMET messages are as indicated in *Tables IV* and *V*.

13. Aircraft in flight wishing forecasts should listen in at the time of the exchange of the daily routine reports (see times given in *Table IV*). Airmen on the ground should refer to the Weather Notice Boards referred to in *Tables IV* and *V* for the requisite forecasts.

NOTE.—(*i*) Eastbound aircraft making a flight to Jodhpur with a very short stop at Karachi may ask the Karachi aeronautical W/T station for a copy of NEWSMET message with any RECTIF message that might have been issued in respect of Karachi-Jodhpur route. Similarly west-bound aircraft in flight towards Rangoon may ask the Rangoon aeronautical W/T station for forecast covering Rangoon-Victoria Point section.

(*ii*) Cases may arise where for special reasons an aircraft has failed to pick up the NEWSMET message in the air and has also not landed at an aerodrome where the NEWSMET message is exhibited on the Notice Board. On such occasions, which are expected to be rare, the aircraft in flight may ask for a copy of the forecast from the nearest wireless station or the forecasting centre.

14. The wireless stations at Chittagong, Sandoway, Bassein, Tavoy and Victoria Point if asked by local enquirers for NEWSMET messages, obtain them from the nearest wireless station at which these are available (*vide Tables IV* and *V*). The W/T stations obtain them, if necessary, from the local meteorological office or aerodrome.

15. The aeronautical W/T station at Rangoon transmits daily between 1630 and 1645 G. M. T., the forecasts issued from Calcutta (between 1545 and 1615 G. M. T.) in respect of the sections Calcutta-Akyab, Akyab-Rangoon and Rangoon-Victoria Point and such other reports as may be required, to the Siamese radio station at Laksi for the benefit of airmen leaving Bangkok for Rangoon in the early morning.

(*b*) *Special forecasts* : *STORMET messages.*

16. These messages, defined in paragraph 3(*ii*), are communicated as soon as ready by forecasting centres to local W/T stations. Their further distribution and disposal are exactly in accordance with those for NEWSMET messages, *i.e.*, as in *Tables IV* and *V*.

(*c*) *Upper Winds* : *PILOT messages.*

17. The pilot balloon stations along the Karachi-Calcutta route mentioned in *Table VI*(*a*) send up balloons 3 times daily, early morning, forenoon and afternoon, while those on the Calcutta-Victoria Point route (with the exception of Calcutta) mentioned in *Table VI*(*b*) send up balloons twice daily, morning and afternoon. The times at which the routine messages are ready, are indicated in column 3 of *Table VI* (*a*) and columns 3 and 4 of *Table VI* (*b*).

18. All messages or parts of messages containing current upper wind information in code begin with the indication PILOT. The form of the message

is **PILOT IIIGG*** $\mathbf{H_1ddv_1v_1}$ $\mathbf{H_1ddv_1v_1}$ etc., where symbols have the usual international significance. (For specifications of Code see *Appendix II.*) They are communicated by the pilot balloon observatories shown in column 1 of *Table VI* (*a* & *b*) (pages 30 and 32), to the wireless stations mentioned in column 5 of *Table VI* (*a*) and column 6 of *Table VI* (*b*) at or before the time noted in column 3 of *Table VI*(*a*) and columns 3 and 4 of *Table VI*(*b*) ; these in turn signal the messages to destination mentioned in column 6 of *Table VI* (*a*) and 7 of *Table VI* (*b*) during the daily routine watch periods shown in column 7 of *Table VI* (*a*) and 8 of *Table VI* (*b*). Further disposal of the PILOT messages is shown in *Tables VII* and *VIII*.

19. When no pilot balloon ascent is possible owing to rain, fog or other reason, the fact is communicated at the usual routine times in the form **PILOT IIIGG** *balloon failed fog* (*or rain or burst, etc.*). As soon as an ascent is possible and data are ready, these are communicated to the wireless station.

20. If the balloon ascent at the usual routine time does not furnish information up to 4000 metres, but up to a lower height, a PILOT message containing the available information and the reason for shortness of ascent is communicated at the usual time. If, later, an ascent reaching higher than the first one is made another PILOT message is communicated.

21. On rare occasions and for special reasons meteorological authorities may arrange for additional pilot balloon ascents at non-routine hours. These data are communicated in the form of PILOT messages to wireless stations for disposal like the routine messages.

22. Airmen on ground at Karachi, Jodhpur, Delhi, Allahabad, Calcutta, Akyab and Rangoon should refer to Weather Notice Boards for the data. Aircraft in flight requiring pilot balloon data should listen in during routine wireless watch periods [*vide* column 7 of *Table VI* (*a*) and column 8, *Table VI* (*b*)]. Wireless stations however are also prepared to supply the latest PILOT messages available on request to aircraft in flight outside these routine times. The wireless station at Chittagong keeps the PILOT reports for Chittagong and Dacca readily available for issue to local enquirers. The wireless stations, at Chittagong, Sandoway, Bassein and Tavoy if asked by local enquirers for PILOT messages relating to other stations obtain the data from the nearest wireless station at which they are available (*vide Table VI*). The W/T stations, if necessary, obtain them from the local meteorological office or aerodrome as the case may require.

(*d*) *Height of low cloud.*

23. Information regarding height of low cloud or 'h' is supplied as a routine in MET, SPEMET, DANMET and IMPMET messages from Current Weather Stations on trans-India route (see *Table III-a*) and other routes where W/T is established. It will be based generally on eye-estimates made by the observers at the time of preparing the messages. These eye-estimates are occasionally liable to considerable error. In making eye-estimates the observers will be guided by their knowledge of the height at which a pilot or a ceiling balloon might have been lost in the cloud, or a hill-top covered by cloud, or height obtained by searchlights where they have been installed.

***GG** = Mean of " time of release of balloon " and " time of completion of ascent," correct to the nearest hour, *e.g.*, if a balloon is released at 0625 G. M. T. and followed up to 0715 G. M. T. the time of observation is given as 0700.

(e) *Special requests for cloud heights.*

24. Current Weather Stations on the Karachi-Victoria Point air route (for list, see *Table III-a*) at which there are also W/T stations furnish information by W/T regarding low cloud height in response to special requests received by W/T according to the International " Q Code " (see *Appendix VII*, page 59).

(f) *Local weather reports, including voluntary reports of adverse weather conditions and their improvement : MET, SPEMET, DANMET and IMPMET reports.*

25. These messages have been defined in paragraph 3(*v*)—(*viii*). Their form is given below :—

$$\frac{\mathbf{MET}}{\mathbf{SPEMET}}\ \mathbf{Station\ GGgg\ wwVhN_h\ DDFWN.}$$

$$\frac{\mathbf{DANMET}}{\mathbf{IMPMET}}\ \mathbf{Station\ w_2GGgg\ wwVhN_h\ DDFWN.}$$

For details regarding specifications, reference may be made to *Appendix II.*

26. It will be seen that the two codes given above are identical except that the time of observations in DANMET and IMPMET reports, is prefixed by the extra figure w_2 giving the special element of warning. The specification of weather phenomena under w_2 which determine the issue of DANMET/IMPMET messages are given in *Appendix III.*

27. The messages have neither address nor signature. The distribution is given in *Tables IX*(*a*) and *IX*(*b*).

28. (*a*) These messages are compiled by the local representatives of the Meteorological Department and refer to the weather conditions at the meteorological observing station.

(*b*) At places where there is an aerodrome officer and where the distance between the meteorological observing station and the aerodrome is considerable, the aerodrome officer sends, in plain language, a message about weather conditions at the aerodrome, if he considers that the conditions described, in any coded message (with reference to the meteorological station) differ from those at the aerodrome. The message is in the following form :—

Weather.—(Heavy rain, rain, showers, drizzle, no precipitation).

Visibility.—(Metres).

Cloud height.—(Metres).

The message is signed " Aerodrome " and distributed like the preceding coded message.

When an aircraft is expected shortly to arrive at an aerodrome, and the weather conditions at the aerodrome justify cautionary announcements, such as visibility has fallen below 1,000 metres on account of fog or dust or blinding rain, or thunder is heard from a neighbouring thunderstorm, or a thunderstorm is believed to be approaching the aerodrome, and when the Aerodrome Officer has reason to think that no intimation of these has been communicated to the aircraft from the Observatory, he will send a plain language message signed "Aerodrome," by W/T to the aircraft in the following form :—

Weather (Thunderstorm approaching aerodrome, or over aerodrome, Fog over aerodrome, Dust-storm approaching aerodrome, or over aerodrome, Heavy or blinding rain over aerodrome).

Visibility (..............metres).

Cloud height (.............metres).

29. Meteorological observing stations mentioned in *Table III(a)* and *Table IX* take their routine observations for MET reports just prior to the commencement of the times given against MET reports in column 4 of *Table XII* and transmit them to the local W/T stations for despatch by wireless at the times of watch which follow soon after.

30. SPEMET, DANMET and IMPMET reports are prepared and issued only during periods when the local W/T station is keeping watch for communication with aircraft in the section concerned. Meteorological observers or their understudies are on watch during these period so as to be able to respond to requests for observations from aircraft or to report immediately the occurrence and improvement of phenomena adverse to flying. They are prepared to supply a coded local weather (SPEMET) report ordinarily within ten minutes of receipt of a request ; further transmission of the message to the requisitioner may take anything from 5 to 30 minutes.

The periods of watch of W/T personnel and weather observers vary according to changes in the scheduled programmes of regular air services and special flights and notified deviations from these programmes. The local W/T stations keep the representative of the Meteorological Department informed of the hours of watch for any aircraft and about their movements. The local aerodrome officer sends similar information regarding the scheduled flights and changes in programmes to the meteorological representative.

31. All coded messages are communicated, immediately on preparation, to the local aerodrome authority and to the local W/T station for transmission in accordance with *Table IX(a)*. A full list of aerodrome authorities and representatives of the meteorological department is given in *Tables X* and *XI*.

32. IMPMET reports are communicated to all to whom the DANMET message was sent. If a DANMET or IMPMET message has to be sent within 10 minutes prior to the time fixed for a routine MET message, only the DANMET or IMPMET message is issued. The particular routine MET observation is, however, taken as usual and recorded in the Aviation Current Weather Register.

33. A wireless station receiving a report from the local meteorological station transmits it as follows :—

(*a*) In the case of routine (MET) reports, at the next routine period, to the wireless stations and aircraft in flight indicated in *Table IX*.

(*b*) In the case of special (SPEMET) reports, immediately to the wireless station or aircraft from which the request was received.

(*c*) In the case of DANMET and IMPMET reports, immediately to aircraft in flight and W/T stations indicated in *Table IX*.

34. Wireless stations receiving coded messages by W/T communicate them to the local aerodrome and meteorological authority and in the case of a SPEMET to the aircraft from which the request for the report was received.

35. At aerodromes or observatories where Weather Notice Boards are maintained for exhibition of meteorological information, local MET, SPEMET, DANMET and IMPMET reports, as well as those received from other stations, are exhibited.

36. Aircraft in flight, wishing local weather reports about the time of the exchange of the daily routine (MET) reports (*vide* column 4, *Table XII*), should listen in for these. For local weather reports at other times, the aircraft sends a request to a wireless station.

37. On receiving a request for a SPEMET report, a wireless station obtains it from the representative of the meteorological department at that place if a local report is required ; if, however, the request is for a report in respect of any other station, it passes on the request to the wireless station concerned.

38. An airman on the ground requiring information about current weather conditions at another station on the air-route should apply to the nearest forecasting centre or aerodrome officer ; at stations (*e.g.*, Sandoway) where neither of these exists but where a wireless station is established, the airman should apply to the wireless station. The officer receiving the request obtains the information by wireless if necessary (provided the request is made at a time when the local wireless station is on watch) and is responsible for the supply of a reply to the request.

39. The wireless stations at Chittagong, Sandoway, Bassein, Tavoy and Victoria Point keep, readily available (in the form of Appendix IV), the latest MET, SPEMET, DANMET or IMPMET reports received from other centres and local meteorological offices, for issue in reply to requisitions from aircraft in flight and from local enquirers. Local meteorological offices supply on request the latest available local data to airmen on the ground.

40. If, after the issue of a DANMET message for any phenomenon, an occasion arises for another DANMET for a second phenomenon *before improvement* of the first, a second *DANMET* message is issued.

41. If, after the issue of a DANMET message, an occasion arises for a second DANMET, *simultaneously or after the improvement of the first but before the relevant IMPMET is issued*, only a second DANMET message is issued in respect of the second dangerous phenomena but no IMPMET is issued for the improvement of the first phenomena.

For example, if a DANMET message has been issued in respect of bad visibility and visibility later improved to more than 2,000 metres but low cloud appeared so as to constitute a fresh danger, a IMPMET message in respect of the improvement of visibility is not issued but a fresh DANMET message is issued in respect of low cloud.

42. If, after the issue of two or more DANMET messages improvement takes place in one or more of the phenomena but not in all the phenomena no IMPMET message is issued ; the IMPMET message is issued only when all the phenomenon for which DANMETS were issued have improved. In this IMPMET w_2 would refer to the phenomena in respect of which the last DANMET was issued.

For example, if DANMET message has been issued in respect of 'wind' and, later, another DANMET message in respect of 'Sand or duststorm,' and if, after some time, wind force drops to 5 or less but visibility continues to remain less than 1,000 metres, a IMPMET message is not issued in respect of either 'sand or duststorm' or 'wind' but merely a fresh DANMET message in respect of 'visibility'; an IMPMET message for visibility is issued finally when the visibility improves to greater than 2,000 metres.

So long as conditions at a station are dangerous in one form or another, only DANMET messages are issued from there and no IMPMET messages.

(g) *Weather Notice Boards.*

43. "Weather Notice Boards" for exhibition of all available weather information at aerodromes are supplied by the Meteorological Department to be fixed in a prominent position, readily accessible to airmen, preferably where they invariably pass on their way to or from their machines. These are erected on the aerodromes at Drigh Road (Karachi), Jodhpur, New Delhi, Bamrauli (Allahabad), Dum Dum(Calcutta), Akyab and Mingaladon(Rangoon). Excepting at Drigh Road and Jodhpur where the entire responsibility will rest with the meteorological staff, aerodrome staff will be responsible at all the other places mentioned above for arrangements for the timely reception and prompt exhibition of information on these notice boards. Similar notice boards are also maintained by the meteorological staff at the meteorological offices at Karachi and Alipore (Calcutta) and at the observatory at Chatham Lines, Allahabad.

44. The reports contained in MET, SPEMET, DANMET and IMPMET as well as QBB messages are entered on the form of *Appendix V* and posted on the notice boards. PILOT reports (and RECTIF PILOT if any), are also entered on the form of *Appendix V*. The NEWSMET and STORMET messages (and corresponding RECTIFS if any), are placed as received, or copied, on the form of *Appendix VI*.

45. A summary of the times of wireless distribution of the various kinds of messages on the main trans-India route is given in *Table XII* (page 41).

C. W. B. NORMAND,
Director-General of Observatories.

TABLES AND APPENDICES

TABLE

Forecasting

Forecasting Centre. 1	**Karachi.** 2	**Calcutta.** 3
Area of responsibility (See Map).	East Persian Gulf and Mekran coasts, Sind, Rajputana, the Punjab, west United Provinces and north Gujarat.	East United Provinces, Bihar and Orissa, Bengal, Assam, Burma and Bay Islands.
Existing air-routes for which service is regularly afforded.	(1) Bushire-Jask-Karachi. (2) Bahrein-Sharjah-Gwadur-Karachi. (3) Karachi-Jodhpur-Delhi-Allahabad. (4) Karachi-Jodhpur-Jhansi-Allahabad. (5) Karachi-Lahore. (6) Karachi-Ahmedabad.	(1) Allahabad-Calcutta. (2) Calcutta-Rangoon-Victoria Point.† (3) Calcutta-Dacca.
Officer-in-charge of forecasting.	Meteorologist, Karachi.	Meteorologist, Calcutta.
Postal address	Meteorological Office, 8/3, Civil Lines, Victoria Road, Karachi.	Meteorological Office, Alipore, Calcutta.
Telegraphic address	Weather, Karachi.	Weather, Calcutta.
Telephones	5124 5125, with extension.	Office : Regent 410. Residence : Alipore 203.
Office hours, *i.e.*, hours (I. S. T.) during which information for aviation can be obtained.	Week days—0830-1700 and 1930-2100. Sundays and Holidays—1000-1300 and 1930-2100.	Monday to Friday—0900-1600 and 1800-2000. Saturday—0900-1300 and 1800-2000. Sundays and Holidays—0900-1200 and 1800-2000.
Synoptic charts prepared.	Two synoptic charts ready at 1130 and 2030 I.S.T. respectively. [*See* paragraph 3 (*i*)].	Two synoptic charts ready at 1130 and 1930 I. S. T. respectively. [*See* paragraph 3 (*i*)]. Special charts during disturbed or suspicious weather in the Bay of Bengal for storm-warning to ships. [*See* paragraph 3 (*ii*)].

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*As a result of the serious earthquake damage in 1935, the Quetta office has been uncertain. The details given in column 6 refer to the office temporarily

† A very general inference regarding weather conditions over Rangoon-Bangkok

I.

Centres.

Poona.	Mainly for Royal Air Force.	
	Peshawar.	Quetta*.
4	5	6
Bombay and Madras Presidencies (excepting north Gujarat), Central India, Central Provinces, the Nizam's Dominions and Mysore.	The Punjab, Waziristan and North-West Frontier Province. Also Royal Air Force flights from these areas to Sind and Baluchistan.	Baluchistan and Sind. Also Royal Air Force flights from these areas to the North-West Frontier Province and the Punjab.
(1) $\frac{\text{Bombay}}{\text{Poona}}$-Ahmedabad. (2) $\frac{\text{Bombay}}{\text{Poona}}$-Hyderabad. (3) Hyderabad-Madras.	Royal Air Force flights on routes: (1) Peshawar-Lahore-Karachi, (2) Peshawar-Quetta, (3) Lahore-Quetta, (4) Delhi-Lahore, (5) Risalpur-Drosh.	Royal Air Force flights on routes: (1) Karachi-Quetta-Chaman, (2) Karachi-Lahore-Peshawar, (3) Quetta-Peshawar, (4) Quetta-Nokkundi, (5) Quetta-Lahore, (6) Karachi-Ambala, (7) Quetta-Delhi.
Meteorologist, Weather Section, Meteorological Office, Poona 5.	Meteorological Officer, No. 1 (Indian) Group Headquarters, R. A. F., Peshawar.	Meteorologist with the R. A. F. Meteorological Office, Karachi.
Meteorological Office, Poona 5.	No. 1 (Indian) Group Headquarters, Royal Air Force, Peshawar.	8/3 Civil Lines, Victoria Road, Karachi.
Weather, Poona.	Weather, Peshawar.	R. A. F. Meteorologist Care Weather, Karachi.
Office: 681 Residence: 690.	Office: 199. Residence: 280.	Office: available on 5124; 5125. Residence: 5164.
Week days—1000-1600. Saturdays, Sundays and Holidays—1000-1300.	0700-2100.	0700-2100.
One synoptic chart ready at 1130 I. S. T. [See paragraph 3 (*i*)]. Special charts during suspicious or disturbed weather over the Arabian Sea at required hours for storm warning to ships.	Two synoptic charts, ready at 11 30 and 20 30 I. S. T.	Two synoptic charts, ready at 1130 and 2030 I. S. T. respectively.

temporarily transferred to Karachi. The date of its retransfer to Quetta is still located at Karachi.

section of the route is added in the evening NEWSMET for Rangoon-Victoria Point section.

TABLE

Forecasting

Forecasting Centre. 1	**Karachi.** 2	**Calcutta.** 3
Time at which aviation weather reports and forecasts are ordinarily issued.	About 1300 I. S. T. (0730 G. M. T.) and 2100 I. S. T. (1530 G. M. T.).	About 1300 I. S. T. (0730 G. M. T.) and 2000 I. S. T. (1430 G. M. T.).
Time of issue of aviation weather reports and forecasts for special flights except on trans-India Route.	At any time during office hours, preferably on 18 hours' notice.	At any time during office hours, preferably on 18 hours' notice.
Distance of Meteorological Office from local aerodrome.	11 miles.	14 miles.
Local Radio Station.	Karachi Radio VWK.	Calcutta Radio VWC.

*As a result of the serious earthquake damage in 1935, the Quetta office has been uncertain. The details given in column 6 refer to the office temporarily located.

I—*contd.*

Centres.

Poona. 4	Mainly for Royal Air Force.	
	Peshawar. 5	Quetta.* 6
About 1300 I. S. T. (0730 G. M. T.).	About 0730 I. S. T. (0200 G. M. T.).	About 1230 I. S. T. (0700 G. M. T.) and 2030 I. S. T. (1500 G. M. T.).
At any time during office hours, preferably on 18 hours' notice.	At any time during office hours, preferably on 18 hours' notice.	At any time during office hours, preferably on 18 hours' notice.
6 miles.	*Nil.*	8 miles from R. A. F. aerodrome.
Nil.	Royal Air Force W/T.	Royal Air Force W/T.

temporarily transferred to Karachi. The date of its re-transfer to Quetta is still at Karachi.

TABLE

Pilot balloon stations taking observa-

Name of station with height, latitude and longitude. 1	Index No. 2	Officer-in-charge and Postal address. 3	Telegraphic address. 4	Telephone No. 5	Office hours I. S. T.* (B. S. T.) 6
1. Agra (554 ft.) 27° 08′ N., 78° 01′ E.	400	Meteorologist-in-charge, Upper Air Observatory, Agra.	Weather, Agra.	86 and extension in office No. 74.	0700-0900 ; 1000-1630
2. Ahmedabad (163 ft.) 23° 02′ N., 72° 38′ E.	507	The Observer-in-charge, Upper Air Observatory, M. E. Quarter No. 21, Ahmedabad Cantonment.	Aero, Ahmedabad.	...	0700-0900 ; 1400-1800
3. Akyab (20 ft.) 20° 08′ N., 92° 55′ E.	488	Meteorological Assistant, Upper Air Observatory, Mayo Road, Akyab.	Weather, Akyab.	84	0700-1200 ; †1500-1800 (B. S. T.)
4. Alipore, Calcutta (21 ft.) 22° 32′ N., 88°20′ E.	460	The Meteorologist, Alipore, Calcutta.	Weather, Calcutta.	Office: Regent 410. Residence: Alipore 208.	0300-2300.†
5. Allahabad (300 ft.) 25° 26′ N., 81° 50′ E.	410	Meteorological Assistant, Upper Air Observatory, near Commissioner's Office, Chatham Lines, Allahabad.	Weather, Allahabad.	426	0300-1130 ; 1300-1600 ; 2130-2230.
6. Bahrein (8 ft.) 26° 14′ N., 50° 35′ E.	308	The Observer-in-charge, Upper Air Observatory, Bahrein, Persian Gulf, *via* Karachi.	Weather, Bahrein.	...	0908-1108 ; 1638-2038.
7. Bangalore (3,021 ft.) 12° 58′ N., 77° 35′ E.	525	Meteorologist to the Government of Mysore, Bangalore.	Meteorop, Bangalore.	...	Week days : 0700-1700. Sundays an Holidays : 0700-0900.
8. Begumpet, Hyderabad (Dn.) (1,700 ft.) 17° 26′ N., 78° 27′ E.	560	The Director, Nizamiah Observatory, Begumpet, Hyderabad (Deccan) N. G. S. Railway.	Nizamiah Observatory, Secunderabad.	...	Week days : 0700-1600. Fridays and Holidays : 0700-1000.
9. Bellary (1,475 ft.) 15° 09′ N., 76° 51′ E.	545	The Observer-in-charge, Upper Air Observatory, Bellary Cantonment.	Aero, Bellary	...	0700-0900 ; 1400-1800.
10. Chittagong (87 ft.), 22°21′ N., 91° 50′ E.	464	The Observer-in-charge, Upper Air Observatory, Chittagong.	Aero, Chittagong.	177	0700-0900 ; 1400-1800.
11. Dacca (26 ft.) 23° 43′ N., 90° 24′ E.	465	The Observer-in-charge, Upper Air Observatory, Dacca University, P. O. Ramna, Dacca.	Aero, Dacca	...	0700-0900 ; 1400-1800.
12. Drigh Road, Karachi (77 ft.) 24° 53′ N., 67°08′ E.	381	Meteorologist, Airship Base Observatory, Drigh Road, Karachi.	Weather, Karachi.	9222	0000-2400.

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* The morning times will be approximately one hour earlier in each case in the case of stations in North
September inclusive.
A denotes time routine messages are ready between 1st October and 31st March inclusive.

II.

tions of upper winds and clouds.

Local wireless station.	Distance of aerodrome from observatory.	Pilot balloon reports ready at or before†		Local reports available for airmen.	How available.	Remarks.
		Morning.	Afternoon.			
7	8	9	10	11	12	13
...	...	*0845	1700	PILOT, LOW CLOUD HEIGHT.	Telephone or personal application.	
...	*Nil*	*0915	1700	Do. .	Personal application.	Pilot reports are supplied to the Tata Airways planes on Air Mail days.
Akyab Radio VTA	1 mile.	A 0815 (B. S. T.) B 0730 (B. S. T.)	1700 (B. S. T.)	Do. .	W./T., telephone or personal application.	
(*a*) Calcutta Radio VWC. (*b*) Receiving installation at Tollygunge. Call sign VWC.	14 miles.	(1) 0445 (2) 1115	1630	Do. .	Do. . .	†During office hours Regent 410 should be telephoned to for weather report and forecast.
Allahabad Radio VWA.	11 miles.	(1) 0445 (2) 1115	1630	Do. .	Do. .	
Bahrein Ae-radio VTE. (Cable and Wireless Ltd.)	5¼ miles.	0845 (L. T.)	1800	Do. .	W./T. by special arrangement if made between airman and W/T station, otherwise personal application.	Pilot reports are supplied to west-bound I. A. planes in flight between Sharjah and Bahrein.
...	...	*0845	*Nil*	PILOT .	Personal application.	
...	12 miles.	*0845	*Nil*	Do. .	Telephone or personal application.	
...	...	*0845	...	Do. .	Personal application.	
Chittagong Radio VTC.	8 miles.	*0730	1600	PILOT, LOW CLOUD HEIGHT.	W./T., telephone or personal application.	
...	3 miles.	*0745	1600	Do. .	Through Chittagong W/T, or personal application.	Data supplied by Chittagong Radio for trans-India route.
(1) Karachi Radio VWK. (2) R. A. F. W/T station.	*Nil*	(1) 0445 (2) 1115	1630	Do. .	W./T., telephone or personal application.	

India and half an hour earlier in each case in the case of other stations between 1st April and 30th

B denotes time routine messages are ready between 1st April and 30th September inclusive.
† Times are in I. S. T. unless otherwise indicated.

TABLE

Pilot balloon stations taking observa-

Name of station with height, latitude and longitude. 1	Index No. 2	Officer-in-charge and Postal address. 3	Telegraphic address. 4	Telephone No. 5	Office hours I. S. T. (B. S. T.). 6
13. Gaya (372 ft.) 24° 43' N., 84° 56'E.	443	The Observer-in-charge, Upper Air Observatory, Aerodrome, Gaya.	...	...	0800-1130 ; 1800-1900.
14. Gwadur (39 ft.) 25° 08' N., 62° 19' E.	343	The Observer-in-charge, Upper Air Observatory, Gwadur, Persian Gulf, *via* Karachi.	Weather, Gwadur.	...	0821-1021 ; 1551-1951.
15. Jacobabad (186 ft.) 28° 17' N., 68° 20'E.	385	The Observer-in-charge, Upper Air Observatory, Jacobabad.	Aero, Jacobabad.	...	0800-0900 ; 1100-1800.
16. Jodhpur (720 ft.), 26° 16'N., 73° 03' E.	387	Meteorological Assistant, Upper Air Observatory, Civil Aerodrome, Jodhpur.	Aero, Jodhpur.	107	*0800-1130 ; 1800-1900 ; 2130-2230.
17. Jubbulpore (1280 ft.) 23° 10'N., 79° 57'E.	425	The Observer-in-charge, Upper Air Observatory, 55, Wright Town, Jubbulpore.	Weather, Jubbulpore.	...	0700-0900 ; 1400-1800.
18. Juhu, Bombay, 19° 06' N., 72° 48' E.	520	Professional Assistant, Upper Air Observatory, Juhu Aerodrome, Juhu, Bombay.	...	...	0700-0900 ; 1400-1800.
19. Lahore (702 ft.) 31° 35' N., 74° 20' E.	364	The Chief Observer, Meteorological Observatory, Jail Road, Lahore.	Weather, Lahore.	2040	0700-0900 ; 1000-1630.
20. Madras (22 ft.) 13° 04' N., 80° 15' E.	540	The Assistant-in-charge, Pilot Balloon Observatory, Cathedral P. O., Madras.	Weather, Madras.	3038	0700-0900 ; 1400-1800.
21. Malegaon (1,430 ft.) 20° 33' N., 74° 32' E.	511	The Observer-in-charge, Upper Air Observatory, Malegaon Camp.	Aero, Malegaon.	...	0700-0900 ; 1400-1800.
22. Mandalay (252 ft.) 21° 59' N., 96° 04' E.	479	The Observer-in-charge, C/o The Principal, Agricultural College, Mandalay.	Weather, Mandalay.	...	0700-0900 ; 1400-1800 (B. S. T.).
23. Mangalore (72 ft.), 12° 52' N., 74° 51' E.	528	The Observer-in-charge, Upper Air Observatory, Maidan Road, Mangalore.	Aero, Mangalore.	...	0700-0900 ; 1400-1800.

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*The morning times will be approximately one hour earlier in each case in the case of stations in North
September inclusive.

A denotes time routine messages are ready between 1st October and 31st March inclusive.

II—*contd.*

tions of upper winds and clouds.

Local wireless station.	Distance of aerodrome from observatory.	Pilot balloon reports ready at or before†		Local reports available for airmen.	How available.	Remarks.
		Morning.	Afternoon.			
7.	8	9	10	11	12	13
Gaya Radio VWG.	*Nil*	(1)0445 (2)1115	1630	PILOT, LOW CLOUD HEIGHT.	W./T., telephone or personal application.	Will function when Patna observatory is shifted to Gaya.
Imperial Airways station, Gwadur Aeradio VTG.	8 miles.	*1000	1700	Do.	W./T., if arranged with W/T station by airmen, else personal application.	PILOT reports are broadcast daily at 0430 G. M. T. Pilot reports are supplied to east bound I. A. planes in flight between Sharjah and Gwadur.
...	2½ miles.	0445	(1) 1430 (2) 1700 (I. S. T.)	Do.	Personal application.	
Jodhpur Radio VWI.	*Nil*	(1) 0445 (2) 1115	1630	Do.	W./T., telephone or personal application.	
...	...	*0845	1700	Do.	Personal application.	
...	*Nil*	*0900	1700	Do.	Telephone or personal application.	
R. A. F. W./T.	4 miles.	*0630	1600	Do.	Do.	Pilot messages supplied to Aerodrome Officer on phone on Air Mail days of I. N. A.
...	7 miles.	*0830	1700	Do.	Do.	
...	1 furlong	*0900	*Nil*	Do.	Personal application.	
...	...	0830 (B.S.T.)	1700 (B.S.T.)	Do.	Do.	
...	...	*0845	*Nil*	PILOT	Do.	

India and half an hour earlier in each case in the case of other stations between 1st April and 30th

* denotes time routine messages are ready between 1st April and 30th September inclusive.
† Times are in I. S. T. unless otherwise indicated.

TABLE

Pilot balloon stations taking observa-

Name of station with height, latitude and longitude. 1	Index No. 2	Officer-in-charge and Postal address. 3	Telegraphic address. 4	Telephone No. 5	Office hours I. S. T. (B. S. T.). 6
24. Mingaladon, Rangoon (77 ft.) 16° 55′ N., 96° 08′ E.	490	Meteorological Assistant, Upper Air Observatory, Mingaladon Aerodrome, Rangoon.	Aero, Rangoon.	During office hours: Govt. 6874. Residence: Mingaladon 10	0700-1200; 1500 1800 (B. S. T.).
25. New Delhi (719 ft.) 28° 35′ N., 77° 12′ E.	369	Meteorological Assistant, Upper Air Observatory, Willingdon Air Station, New Delhi.	Aero, New Delhi.	3613	*0300-1130; 1300-1900.
26. Patna (173 ft.) 25° 37′ N., 85° 10′ E.	450	The Observer-in-charge, Upper Air Observatory, Physics Laboratory, Science College, Mahindra, Patna.	Aero, Patna.	...	0700-0900; 1400-1800.
27. Peshawar (1,164 ft.) 34° 00′ N., 71° 37′ E.	355	Meteorological Officer, No. 1 (Indian) Group Headquarters, Royal Air Force, Peshawar.	Weather, Peshawar.	Office: 100. Residence: 280.	0700-2100.
28. Poona (1,834 ft.) 18° 31′ N., 73° 51′ E.	500	The Director-General of Observatories, Ganeshkhind Road, Poona 5.	Weather, Poona.	Office: 681. Residence: 690.	Week days. —0700-1000. Sundays, and Holidays—0700-1300.
29. Port Blair (201 ft.) 11° 40′ N., 92° 43′ E.	498	The Observer-in-charge, Upper Air Observatory, Sadipore, Port Blair, Andamans.	Aero, Port Blair.	...	0700-0900; 1400-1800 (B. S. T.).
30. Quetta** (5,640 ft.) 30° 10′ N., 67° 01′ E.	350	Meteorologist	...	...	......
31. Sambalpur (486 ft.) 21° 28′ N., 83° 58′ E.	480	The Observer-in-charge, Upper Air Observatory, Dafai Para, Sambalpur.	Weather, Sambalpur.	...	0700-0900; 1400-1800.
32. Sandoway (28 ft.) 18° 28′ N., 94° 21′ E.	486	The Observer-in-charge, Upper Air Observatory, Old Deputy Jailor's Quarters, Sandoway.	Weather, Sandoway.	6	0700-0900; 1400-1800 (B. S. T.)

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* The morning times will be approximately one hour earlier in each case in the case of stations in North tember inclusive.

A denotes time routine messages are ready between 1st October and 31st March inclusive.

** A temporary pilot balloon station has been opened at Dera Ismail Khan in place of Quetta which are given below.

Dera Ismail Khan (570 ft.) 31° 49′ N., 70° 55′ E.	356	The observer-in-charge, Upper Air Observatory, Kutcherry Gate, Dera Ismail Khan.	Aero Dera Ismail Khan.	...	0700-0900; 1400-1800.

II—*contd.*

tions of upper winds and clouds.

Local wireless station.	Distance of aerodrome from observatory.	Pilot balloon reports ready at or before†		Local reports available for airmen.	How available.	
		Morning.	Afternoon.			
7	8	9	10	11	12	13
Rangoon aerodrome Radio VTW.	*Nil*	A0800 (B.S.T.). B0715 (B.S.T.).	1700 (B.S.T.)	PILOT, LOW CLOUD HEIGHT.	W./T., telephone or personal application.	
(Delhi Radio VWD.	*Nil*	(1) 0445 (2) 1115	1630	Do.	Do.	
...	...	*0815	1700	Do.	Through Gaya radio or personal application.	Will function till pilot balloon station is shifted to Gaya.
R. A. F. W./T.	*Nil*	*0945	1700	Do.	W./T., telephone or personal application.	
...	4 miles	*0900	*Nil*	Do.	Telephone or personal application.	
...	...	*0830	1700	Do.	Personal application.	
...	...	...	...	...	...	
...	...	*0830	1700	PILOT, LOW CLOUD HEIGHT.	Personal application.	
Sandoway Radio VTS.	Two aerodromes 1 mile and 6 miles.	A0800 (B.S.T.). B0715 (B.S.T.).	1700 (B.S.T.).	Do.	W/T, telephone or personal application.	

India and half an hour earlier in each case in the case of other stations between 1st April and 30th Sep-

B denotes time routine message are ready between 1st April and 30th September inclusive.

had to be closed as a result of the earthquake in May 1935. The particulars about Dera Ismail Khan

Army Signals W./T.	...	0945	1700	PILOT, LOW CLOUD HEIGHT.	Personal application.	

† Times are in I. S. T. unless otherwise indicated.

TABLE

Pilot balloon stations taking observa-

Name of station with height, latitude and longitude.	Index No.	Officer-in-charge and Postal address.	Telegraphic address.	Telephone No.	Office hours I. S. T. (B. S. T.)
1	2	3	4	5	6
33. Sharjah (18 ft.) 25° 21′ N., 55° 24′ E.	307	The Observer-in-charge, Upper Air Observatory, Imperial Airways Fort, Sharjah (Persian Gulf).	Weather, Sharjah.	...	0400-0700; 1400-* 1800 (L. T.).
34. Tavoy (19 ft.) 14° 05′ N., 98° 12′ E.	402	The Observer-in-charge, Upper Air Observatory, Tavoy (Burma).	Aero, Tavoy	...	0700-0900; 1400-1800 (B. S. T.).
35. Tezpur (258 ft.) 26° 37′ N., 92° 47′ E.	471	The Observer-in-charge, Upper Air Observatory, Royal Silver Jubilee Field, Tezpur.	Aero, Tezpur	...	0700-0900; 1400-1800.
36. Trichinopoly (255 ft.) 10° 49′ N., 78° 42′ E.	537	The Observer-in-charge, Upper Air Observatory, Superintending Engineer's Office, Trichinopoly.	Weather, Trichinopoly.	...	0700-0900; 1400-1800.
37. Trivandrum (200 ft.) 8° 29′ N., 76° 57′ E.	581	The Government Meteorologist, The Observatory, Trivandrum.	Meteorologist, Trivandrum.	40	0730-1100; 1530-1730 on all days except Mondays and Holidays. Mondays: 0630-0800; 1530-1730.†
38. Victoria Point (157 ft.) 9° 59′ N., 98° 35′ E.	494	The Observer-in-charge, Upper Air Observatory, Victoria Point.	Weather, Victoria Point.	*Nil*	0700-0900; 1400-1800 (B. S. T.).
39. Waltair (126 ft.) 17° 42′ N., 83° 18′ E.	551	The Observer-in-charge, Upper Air Observatory, Maharanipetta, Vizagapatam.	Weather, Waltair.	...	0700-0900; 1400-1800.

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* The morning times will be approximately one hour earlier in each case in the case of stations in North
tember inclusive.

A denotes time routine messages are ready between 1st October and 31st March inclusive.

II—*concld.*

tions of upper winds and clouds.

Local wireless station.	Distance of aerodrome from observatory.	Pilot baloon reports ready at or before†		Local reports available for airmen.	How available.	Remarks.
		Morning.	Afternoon.			
7	8	9	10	11	12	13
Imperial Airways Station.	120 yards	1000	1800	Do.	W/T, or personal application.	Data supplied to Gwadur and Bahrein W./T., and to I. A. planes in flight between Gwadur and Bahrein, as required. On non-air-mail days of I. A. the office hours in the morning will be 0700-0900 L. T.
Tavoy W/T, VTT	4 miles	A0745 (B.S.T.). B 0715 (B.S.T.).	1700 (B.S.T.).	PILOT, LOW CLOUD HEIGHT.	W./T., or Personal application.	
...	...	*0800	1700	Do.	Personal application.	
...	...	*0830	1700	Do.	Do.	
...	3½ miles	0930 on all days except holidays and at 0730 on Mondays.	*Nil*	PILOT	Do.	†Sundays are not included among the Holidays.
Victoria Point Radio VTV	7 miles	A0745 (B.S.T.). B0715 (B.S.T.).	1700 (B.S.T.).	PILOT, LOW CLOUD HEIGHT.	W./T., telephone or personal application.	Victoria Point has a non-exchange telephone, hence no number is necessary.
...	...	*0815	1700	Do.	Personal application.	

India and half an hour earlier in each case in the case of other stations between 1st April and 30th Sep-

B denotes time routine messages are ready between 1st April and 30th September inclusive.
† Times are in I. S. T. unless otherwise indicated.

TABLE

Local Current Weather

Name of station with height, latitude and longitude. 1	International Index No.	Distance from local aerodrome, if any. 2	Officer-in-charge and postal address. 3	Telegraphic address. 4	Telephone No.
				(a) Full Scheme	: Karachi-
1. Drigh Road, Karachi (77 ft.) 24° 53′ N., 67° 08′ E.	381	*Nil*	Meteorologist, Airship Base Observatory, Drigh Road (Karachi).	Weather, Karachi.	9222
2. Jodhpur (720 ft.) 26° 18′ N., 73° 03′ E.	387	*Nil*	Meteorological Assistant, Upper Air Observatory, Civil Aerodrome, Jodhpur.	Aero, Jodhpur.	167
3. New Delhi (719 ft.) 28° 35′ N., 77° 12′ E.	369	*Nil*	Meteorological Assistant, Upper Air Observatory, Willingdon Air Station, New Delhi.	Aero, New Delhi.	3018
4. Allahabad (300 ft.) 25° 26′ N., 81° 50′ E.	410	11 miles	Meteorological Assistant, Upper Air Observatory, near Commissioner's Office, Chatham Lines, Allahabad.	Weather, Allahabad.	420
5. Alipore, Calcutta (21 ft.) 22° 32′ N., 88° 20′ E.	400	14 miles	Meteorologist, Alipore, Calcutta.	Weather, Calcutta.	Office: Regent 410, Residence: Alipore 208.
6. Chittagong (87 ft.) 22° 21′ N., 91° 50′ E.	464	...	Observer-in-charge, Upper Air Observatory, Chittagong.	Aero, Chittagong.	177
7. Akyab (20 ft.) 20° 08′ N., 92° 55′ E.	483	¼ mile	Meteorological Assistant, Upper Air Observatory, Mayo Road, Akyab.	Weather, Akyab.	34
8. Sandoway (28 ft.) 18° 28′ N., 94° 21′ E.	486	...	Observer-in-charge, Upper Air Observatory, Old Deputy Jailor's Quarters Sandoway.	Weather, Sandoway.	5
9. Bassein (26 ft.) 16° 46′ N., 94° 46′ E.	489	...	Meteorological Observer, Civil Hospital, Bassein (Burma).	Weather, Bassein (Burma).	Bassein 2
10. Mingaladon, Rangoon (77 ft.) 16° 55′ N., 96° 08′ E.	490	*Nil*	Meteorological Assistant, Upper Air Observatory, Mingaladon Aerodrome, Rangoon.	Aero, Rangoon.	During office hours Govt. 6374. Residence: Mingaladon 10
11. Tavoy (19 ft.) 14° 05′ N., 98° 12′ E.	492	...	The Observer-in-charge, Upper Air Observatory, Tavoy (Burma).	Aero, Tavoy.	...
12. Victoria Point (157 ft.) 9° 59′ N., 98° 35′ E.	494	7 miles	Observer-in-charge, Upper Air Observatory, Victoria Point.	Weather, Victoria Point.	*Nil*
			(b) Partial Scheme	: Bahrein/Bushire-	
1. Drigh Road, Karachi (77 ft.) 24° 58′ N., 67° 08′ E.	381	*Nil*	Meteorologist, Airship Base Observatory, Drigh Road (Karachi).	Weather, Karachi.	9222
2. Gwadur (89 ft.) 25° 08′ N., 62° 19′ E.	348	...	Observer-in-charge, Upper Air Observatory, Gwadur, Persian Gulf, *via* Karachi.	Weather, Gwadur.	...

III.

Reporting Stations.

Hours of attendance I. S. T. (B. S. T.). 5	Local wireless station. 6	Reports available. 7	How obtainable. 8	Remarks. 9
Victoria Point route.				
24 hours . . .	(1) Karachi Radio VWK. (2) R. A. F. W./T. station.	MET, SPEMET, DANMET, IMPMET.	By W./T., telephone or personal application.	
0800-1130; 1300-1900; 2130-2230.	Jodhpur Radio VWI. D/F also.	Do. .	Do.	
0800-1130; 1300-1900	(1) Delhi Radio VWD (2) R. A. F. W./T. also in winter.	Do. .	Do.	
0800-1130; 1300-1900; 2130-2230.	Allahabad Radio VWA	Do. .	Do.	
0800-2300 * . .	(*a*) Calcutta Radio VWC. (*b*) Receiving installation at Tollygunge. Call sign VWC.	Do. .	Do.	*During office hours Regent 410 should be telephoned to for weather reports and forecasts.
0700-0900; 1400-1800 .	Chittagong Radio VTC.	Do. .	Do.	
0700-1200; 1600-1800 (B. S. T.).	Akyab Radio VTA .	Do. .	Do.	
0700-0900; 1400-1800 (B. S. T.).	Sandoway Radio VTS.	Do. .	Do.	
0700-0900; 1400-1800 (B. S. T.).	Bassein Radio VTX .	Do. .	Do.	
0700-1200; 1600-1800 (B. S. T.).	Rangoon Aerodrome Radio VTW.	Do. .	Do.	
0700-0900; 1400-1800 (B. S. T.).	Tavoy W/T, VTT .	Do. .	By W./T. or personal application.	
0700-0900; 1400-1800 (B. S. T.).	Victoria Point Radio VTV.	Do. .	By W./T., telephone or personal application.	
Karachi Section.				
24 hours . . .	(1) Karachi Radio VWK. (2) R. A. F. W./T. station.	Do.	Do.	
0821-1021; 1551-1951 .	Imperial Airways' station, Gwadur Aeradio VTG.	Surface observations taken at 0400 G. M. T. daily, in the form $wwVhN_h$ DDFWN.	Broadcast daily at 0420 G. M. T.	
		MET, SPEMET, DANMET, IMPMET.	By W./T. or personal application.	Supplied only on days of flight of I. A. planes.

TABLE

Local Current Weather

Name of station with height, latitude and longitude. 1	International Index No.	Distance from local aerodrome, if any. 2	Officer-in-charge and postal address. 3	Telegraphic address. 4	Telephone No.

(b) Partial Scheme : Bahrein/Bushire

Name of station with height, latitude and longitude. 1	International Index No.	Distance from local aerodrome, if any. 2	Officer-in-charge and postal address. 3	Telegraphic address. 4	Telephone No.
3. Bahrein (8 ft.) 26° 14′ N., 50° 35′ E.	308	5½ miles	The Observer-in-charge, Upper Air Observatory, Bahrein, Persian Gulf, *via* Karachi.	Weather, Bahrein.	...
4. Sharjah (18 ft.) 25° 21′ N., 55° 24′ E.	307	120 yards	The Observer-in-charge, Upper Air Observatory, Imperial Airways Fort, Sharjah (Persian Gulf).	Weather, Sharjah.	...

(c) Partial Scheme : Karachi-

Stations not equipped

Name of station with height, latitude and longitude. 1	International Index No.	Distance from local aerodrome, if any. 2	Officer-in-charge and postal address. 3	Telegraphic address. 4	Telephone No.
1. Barmer (638 ft.) 25° 45′ N., 71° 23′ E.	380	...	The Meteorological Observer, Meteorological Observatory, Barmer (J. Ry.).	Weather, Barmer.	...
2. Asansol (414 ft.) 23° 41′ N., 86° 59′ E.	...	...	Meteorological Observer, C/o The Chief Sanitary Officer, Mines Board of Health, Asansol.	...	...
3. Henzada . . .	...	...	Meteorological Observer, C/o The Superintendent of Post Offices, Henzada.	...	...

III—*contd.*

Reporting Stations.

Hours of attendance I. S. T. (B. S. T.). 5	Local wireless station. 6	Reports available. 7	How obtainable. 8	Remarks. 9
Karachi Section—*contd.*				
0908-1108 ; 1638-2038 .	Bahrein Aeradio VTE	MET, SPEMET, DANMET, IMPMET.	By W./T. or personal application.	Supplied only on days of flight of I. A. planes.
0848-1048 ; 1548-1948 .	Imperial Airways station.	Do. .	Do. .	Do.
Calcutta-Victoria Point Section.				
with local W./T.				
……	*Nil*	MET, DANMET, IMPMET.	Through Karachi W./T.	DANMET & IMPMET messages will be issued whenever occasion demands during daylight hours.
……	*Nil*	Do. .	Through Calcutta W./T.	Do.
……	*Nil*	Do. .	Through Bassein W./T.	Do.

TABLE IV.

Distribution of weather forecasts to wireless stations and local aerodromes on the trans-India air route.

Office of origin of weather forecast. 1	Route or Section. 2	Telephone or Telegraph to 3	Wireless to 4	Periods. 5	Remarks. 6
Meteorological Office, Karachi.	Karachi-Jodhpur	(1) Drigh Road Observatory.* (2) Malir W/T.			
Do.	Jodhpur-Allahabad (*via* Delhi or Jhansi).	Malir W/T	Jodhpur W/T (1) Jodhpur W/T (2) Delhi W/T (3) Allahabad W/T	1315 to 1345 I. S. T. (0745 to 0815 G. M. T.) and 2145 to 2215 I. S. T. (1615 to 1645 G. M. T.)	‡
Do.	Karachi-Ahmedabad	Drigh Road Observatory*	..	..	
Do.	Karachi-Jask-Sharjah	Do.	..	..	
Meteorological Office, Alipore, Calcutta.	Calcutta-Allahabad	(1) Dum Dum Aerodrome* (2) Calcutta W/T	Allahabad W/T	1315 to 1345 I. S. T. (0745 to 0815 G. M. T.) and 2145 to 2215 I.S.T. (1615 to 1645 G. M. T.)	
Do.	Calcutta-Akyab (*via* Dacca or Chittagong)	(1) Dum Dum Aerodrome* (2) Calcutta W/T	Akyab W/T	1230 to 1300 I. S. T. (0700 to 0730 G. M. T.) and 2115 to 2145 I. S. T. (1545 to 1615 G. M. T.)	
Do.	Akyab-Rangoon	Calcutta W/T	(1) Akyab W/T (2) Mingaladon W/T		
Do.	††Rangoon-Victoria Point **	Calcutta W/T	(1) Mingaladon W/T (2) Victoria Point W/T† (3) Tavoy W/T†		**The forecast for the Rangoon-Victoria Point section may often contain an inference only without forecast.

NOTE.—Aircraft in flight should listen for the appropriate forecast at the above times.

* For posting copy on local Weather Notice-Board.

† Victoria Point and Tavoy will not receive this as a routine until traffic increases and further instructions are issued.

‡ In the NEWSMET messages for this section, conditions over the two routes, *viz.*, Jodhpur-Delhi-Allahabad and Jodhpur-Jhansi-Allahabad will be mentioned separately whenever weather along these two routes is, or is expected to be, markedly different and cannot be easily and clearly summarised together.

†† A very general inference regarding conditions over Rangoon-Bangkok section of the route is added in the evening NEWSMET for the Rangoon-Victoria Point section.

TABLE V.

Disposal of weather forecasts received by wireless at wireless stations on the trans-India air route.

Wireless station. 1	'Phone or telegraph to 2	Messages to be exhibited on Weather Notice-Board at 3	Remarks. 4
Jodhpur . .	Jodhpur Observatory.	Jodhpur Aerodrome.	
Delhi . . .	New Delhi Aerodrome.	New Delhi Aerodrome.	
Allahabad . .	(1) Allahabad Observatory. (2) Allahabad Aerodrome.	(1) Allahabad Observatory. (2) Allahabad Aerodrome.	
Akyab . . .	Akyab Aerodrome .	Akyab Aerodrome.	
Mingaladon (Rangoon).	Mingaladon Aerodrome.	Mingaladon Aerodrome.	
Tavoy . . .	Tavoy landing ground.	..	Issue to aircraft, if asked for, from wireless station. Officer-in-Charge will be responsible for supply to pilots on the aerodrome. This arrangement will come into operation as a routine only after further instructions. See Table I.
Victoria Point .	Victoria Point landing ground.	...	

TABLE VI(*a*).

Upper Wind Information—Distribution of 'Pilot' messages on the Karachi-Calcutta air route.

Pilot Balloon Station.	Index No.	Routine messages are ready to be sent by pilot balloon station at or before	To be made available by	To be made available at	To be wirelessed to	To be wirelessed at	Remarks.
1	2	3	4	5	6	7	8
Drigh Road, Karachi .	381	(1) Early morning 0445 I. S. T. (2315 G. M. T.) (2) Forenoon 1115 I. S. T. (0545 G. M. T.). (3) Afternoon 1630 I. S. T. (1100 G. M. T.).	Telephone.	Malir W/T .	Jodhpur . . .	I. S. T. G. M. T. (1) 0500-0530. 2330-2400. (2) 1115-1145. 0545-0615. (3) 1615-1645. 1045-1115.	
Jodhpur . . .	387	Do. .	Do. .	Jodhpur W/T .	(*a*) Karachi . (*b*) Delhi . (*c*) Allahabad .	Do.	
New Delhi . .	369	Do. .	Do. .	Delhi W/T .	(*a*) Jodhpur . (*b*) Allahabad .	Do.	
Allahabad . .	410	Do. .	Do. .	Allahabad W/T	(*a*) Jodhpur . (*b*) Delhi . (*c*) Gaya . (*d*) Calcutta. .	Do.	
Gaya* (at present at Patna).	448	Do. .	Do. .	Gaya W/T .	(*a*) Allahabad . (*b*) Calcutta.	Do.	
Calcutta (Alipore Observatory).	460	Do.	Do. .	Calcutta W/T .	(*a*) Allahabad . (*b*) Gaya.	Do.	

Patna	450	(1) Morning 08-30 I. S. T. (03-00 G.M. T.) (2) Afternoon 16-00 I.S.T. (10-30 G. M. T.).	Telegram	Gaya /WT	Allahabad Calcutta	W/T	(1) 1115-1145 (2) 1615-1645	0545-0615 1115-1145	When Gaya W/T station and Allahabad or Calcutta W/T stations are on watch for aircraft the morning PILOT message will be wirelessed as soon as possible after receipt by Gaya W/T to Allahabad and/or Calcutta, and to aircraft in flight as may be necessary.

NOTE.—Aircraft in flight should listen for the appropriate message at the times mentioned in column 7.

*Until the pilot balloon station at Patna is shifted to the aerodrome at Gaya, the pilot balloon reports from Patna will be distributed as indicated against Patna in the above Table.

TABLE VI (*b*).

Upper Wind Information—Distribution of 'Pilot' messages on the Calcutta-Victoria Point route.

Pilot Balloon Station.	Index No.	Routine messages are ready to be sent from pilot balloon stations at or before		To be made available		To be wirelessed.			Remarks.
				by	at	to	at		
1	2	3	4	5	6	7	8		9
Calcutta (Alipore Observatory).	460	Morning. (1) 0445 I. S. T. 2315 G. M. T. (2) 1115 I. S. T. 0545 G. M. T.	Afternoon. 1645 I. S. T. 1115 G. M. T.	Tele-phone.	Calcutta W/T	(1) Chittagong. (2) Akyab.	I. S. T. 0800-0830† 1230-1300 1645-1715	G. M. T. 0230-0300 0700-0730 1115-1145	†During the period 1st April to 30th September the data will be broadcast between 0700-0730 I. S. T.
Dacca . .	465	0745* I. S. T. . 0215 G. M. T. .	1600 I. S. T. . 1030 G. M. T.	Telegram	Chittagong W/T. .	(1) Calcutta (2) Akyab .	0800-0830† 1645-1715	0230-0300 1115-1145	Do.
Chittagong .	464	0730* I. S. T. . 0200 G. M. T. .	1600 I. S. T. 1030 G. M. T.	Telephone	Do. .				
Akyab . .	483	0815 B. S. T. (A) 0145 G. M. T. 0730 B. S. T. (B) 0100 G. M. T.	1700 B. S. T. 1030 G. M. T.	Tele-phone.	Akyab W/T .	(1) Calcutta (2) Chittagong. (3) Mingaladon.	B.S.T. 0900-† 0930 1745-1815	G.M.T. 0230-0300 1115-1145	Do.
Sandoway .	486	Do. .	Do. .	Do. .	Sandoway W/T	(1) Akyab (2) Mingaladon.	Do. .		Do.
Rangoon . .	490	0800 B.S.T. (A) 0130 G. M. T. 0715 B.S.T. (B) 0045 G.M.T.	Do. .	Do. .	Mingaladon . W/T.	(1) Akyab (2) Tavoy. (3) Victoria Point.	Do. .		Do.

Tavoy	492	Do.	Do.	Do.	Tavoy W/T	(1) Mingaladon‡. (2) Victoria Point.	Do.	‡To be telephoned to Aerodrome Officer for exhibition on notice board.
Victoria Point	494	0745 B.S.T. (A) 0115 G. M. T. 0715 B.S.T. (B) 0045 G.M.T.	Do.	Do.	Victoria Point W./T.	(1) Mingaladon. (2) Tavoy.	Do.	

NOTE.—Aircraft in flight should listen for the appropriate message at the times mentioned in column 8.

* The morning times will be one hour earlier in each case between 1st April and 30th September inclusive.

A denotes time routine messages are ready between 1st October and 31st March inclusive.

B denotes time routine messages are ready between 1st April and 30th September inclusive.

TABLE VII.

Disposal of "Pilot" messages received by wireless or land telegram at wireless stations on the trans-India air route.

Wireless station.	'Phone or Telegraph to	Messages to be exhibited on Weather Notice-Board at	Remarks.
1	2	3	4
Malir (Karachi)	(1) Meteorological Office, Karachi. (2) Drigh Road Observatory.	(1) Meteorological Office, Karachi. (2) Drigh Road Aerodrome.	.. ..
Jodhpur	Jodhpur Observatory.	Jodhpur Aerodrome	..
Delhi	New Delhi Aerodrome.	New Delhi Aerodrome.	Aerodrome Officer will be responsible for the correct posting on the Notice-Board.
Allahabad	(1) Allahabad Observatory. (2) Allahabad Aerodrome.	(1) Allahabad Observatory. (2) Allahabad Aerodrome.	.. Aerodrome Officer will be responsible for the correct posting on the Notice-Board.
Calcutta	(1) Alipore Observatory. (2) Dum-Dum Aerodrome.	(1) Alipore Observatory. (2) Dum-Dum Aerodrome.	.. Aerodrome Officer will be responsible for the correct posting on the Notice-Board.
Chittagong	..	..	For information to enquirers.
Akyab	Akyab Aerodrome.	Akyab Aerodrome	Aerodrome Officer will be responsible for correct posting on the Notice-Board.
Mingaladon (Rangoon).	Mingaladon Aerodrome.	Mingaladon Aerodrome.	Aerodrome Officer will be responsible for correct posting on the Notice-Board.
Tavoy	..	..	For information to enquirers.
Victoria Point	Victoria Point Aerodrome.	..	Officer-in-Charge of landing ground will be responsible for supply to airmen on the aerodrome.

TABLE VIII.

Arrangements for exhibiting local* "Pilot" reports on the trans-India air route.

Pilot Balloon Station. 1	Telephone to 2	Officer responsible for correct posting of reports on Weather Notice-Board near Aerodrome. 3	Remarks. 4
Drigh Road	..	Chief Observer	..
Jodhpur	..	Meteorological Assistant.	..
New Delhi	..	Aerodrome Officer	..
Allahabad	Allahabad Aerodrome.	Do.	Notice-Board will also be maintained at Observatory.
Alipore, Calcutta	Dum-Dum Aerodrome.	Do.	..
Akyab	..	Do.	..
Rangoon	..	Do.	..

*The "Pilot" reports from Ahmedabad and Gwadur received by telegram at the Meteorological Office, Karachi, will also be exhibited on the Weather Notice-Board at Drigh Road Aerodrome.

TABLE IX (*a*).

Distribution of local current weather reports (MET, SPEMET, DANMET and IMPMET Reports) on the trans-India air route from stations equipped with W/T.

Name of reporting Observatory.	Local distribution by Meteorologist or Observatory.	Distribution by Wireless.	Distribution of reports received by W/T.
1	2	3	4
1. Karachi	A W/T	(1) Aircraft in flight between Gwadur and Jodhpur.	..
		(2) Jodhpur	A & M
2. Jodhpur	A W/T	(1) Aircraft in flight between Karachi and Allahabad.	..
		(2) Karachi	A & M
..	.	(3) Delhi	A & M
..	.	(4) Allahabad	A & M
3. New Delhi	A W/T	(1) Aircraft in flight between Jodhpur and Allahabad.	..
		(2) Karachi	A & M
		(3) Jodhpur	A & M
		(4) Allahabad	A & M
4. Allahabad	A W/T	(1) Aircraft in flight between Jodhpur and Calcutta.	..
		(2) Karachi	M
		(3) Jodhpur	A & M
		(4) Delhi	A & M
		(5) Calcutta	A & M
5. Calcutta	A W/T	(1) Aircraft in flight between Allahabad and Akyab.	..
		(2) Allahabad	A & M
		(3) Chittagong—To be kept by local W/T.	
		(4) Akyab	A & M
6. Chittagong	A W/T	(1) Aircraft in flight between Calcutta and Akyab.	..
		(2) Calcutta	A & M
		(3) Akyab	A & M
7. Akyab	A W/T	(1) Aircraft in flight between Calcutta and Rangoon.	..
		(2) Calcutta	A & M
		(3) Chittagong—To be kept by local W/T.	
		(4) Rangoon	A & M
8. Sandoway	A W/T	(1) Aircraft in flight between Akyab and Rangoon.	..
		(2) Calcutta	M
		(3) Akyab	A & M
		(4) Rangoon	A & M
9. Bassein	A W/T	(1) Aircraft in flight between Akyab and Rangoon.	..
		(2) Calcutta	M
		(3) Akyab	A & M
		(4) Rangoon	A & M
10. Rangoon	A W/T	(1) Aircraft in flight between Akyab and Victoria Point.	..
		(2) Calcutta	M
		(3) Akyab	A & M
		(4) Tavoy—To be kept by local W/T	..
		(5) Victoria Point	A & M

TABLE IX (*a*)—*contd.*

Name of reporting Observatory.	Local distribution by Meteorologist or Observatory.	Distribution by Wireless.	Distribution of reports received by W/T.
1	2	3	4
11. Tavoy . .	W/T	(1) Aircraft in flight between Rangoon and Victoria Point.	..
		(2) Calcutta	M
		(3) Rangoon	A & M
		(4) Victoria Point . . .	A & M
12. Victoria Point .	A W/T	(1) Aircraft in flight between Rangoon and Victoria Point.	..
		(2) Calcutta	M
		(3) Rangoon	A & M
		(4) Tavoy—To be kept by local W/T.	..

NOTE—

A.—Aerodrome officer or aerodrome authority.
M.—Meteorological Department, Meteorologist or Observer.
W/T—Wireless telegraph station.

TABLE IX (*b*).

Distribution of local current weather reports (MET, DANMET and IMPMET reports), on the trans-India Air Route from stations not equipped with W/T.

Name of reporting Observatory.	Reports to be sent by telegram to	Local distribution by telephone to	Distribution by local W/T.	Distribution of reports received by W/T.	Remarks.
1. Barmer .	Meteorological Office, Karachi.	(*a*) Drigh Road Observatory.	......	...	Reports to be exhibited on Weather Notice-Boards.
		(*b*) Karachi W/T	(1) Aircraft in flight between Karachi and Jodhpur.	...	
			(2) Jodhpur W/T .	M.	Do.
2. Asansol .	Meteorological Office, Alipore.	(*a*) Dum Dum Aerodrome.	......	...	Do.
		(*b*) Calcutta W/T	(1) Aircraft in flight between Calcutta and Allahabad.	...	
			(2) Allahabad W/T	A. and M. .	Do.
3. Henzada .	...	Bassein W/T .	(1) Aircraft in flight between Akyab and Rangoon	...	
			(2) Akyab W/T. .	A. and M. .	Do.
			(3) Rangoon W/T .	A. and M. .	Do.

TABLE X.

List of Authorities in charge of Aerodromes carrying out the functions of Aerodrome Officers on the trans-India air route.

Aerodrome.	Authority in Charge.	Telegraphic Address.	Telephone number.
Karachi . .	Officer-in-charge, Karachi Air Port, Drigh Road, Sind.	Aerodrome, Karachi.	Drigh Road, 38.
Jodhpur . .	Superintending Engineer, P. W. D., Jodhpur.	Aerodrome, Jodhpur.	Jodhpur, 130.
New Delhi . .	Aerodrome Officer, Willingdon Air Station, New Delhi.	Aerodrome, New Delhi.	Delhi, 2375 (day). 2357 (night).
Allahabad . .	Aerodrome Officer, Civil Aerodrome, Bamhrauli, Allahabad.	Aerodrome, Allahabad.	Allahabad, 383.
Calcutta . .	Aerodrome Officer, Civil Aerodrome, Dum Dum (Bengal).	Aerodrome, Dum Dum.	Regent, 803.
Chittagong . .	Executive Engineer, Public Works Department, Chittagong.	..	..
Akyab . .	Aerodrome Officer, Civil Aerodrome, Akyab.	Aerodrome, Akyab.	Akyab, 6.
Sandoway . .	Sub-Divisional Officer, P. W. D., Sandoway.	Aerodrome, Sandoway.	Sandoway, No. 5.
Bassein . .	Executive Engineer, Public Works Department, Bassein, Burma.	Aerodrome, Bassein, Burma.	Bassein, No. 6.
Rangoon . .	Aerodrome Officer, Civil Aerodrome, Mingaladon, Rangoon.	Aerodrome, Rangoon.	Rangoon, 6874.
Tavoy . .	Executive Engineer, Public Works Department, Tavoy.	Aerodrome, Tavoy.	..
Victoria Point .	Officer-in-charge, Civil Landing Ground, Victoria Point.	Aerodrome, Victoria Point.	*Nil.*

TABLE XI.

List of representatives of Meteorological Department on trans-India air route.

Place.	Designation and Postal Address.	Telegraphic Address.	Telephone Number.
	Forecasting Centres.		
Karachi . .	Meteorologist, Meteorological Office, No. 8/3, Civil Lines, Victoria Road, Karachi.	Weather, Karachi.	Karachi, 5124.
Calcutta . .	Meteorologist, Meteorological Office, Alipore, Calcutta.	Weather, Calcutta.	Regent, 410.
	Auxiliary Centres.		
Jodhpur . .	Meteorological Assistant, Upper Air Observatory, Civil Aerodrome, Jodhpur.	Aero, Jodhpur	Jodhpur, 167.
New Delhi . .	Meteorological Assistant, Upper Air Observatory, Willingdon Air Station, New Delhi.	Aero, New Delhi	Delhi, 3613.
Allahabad . .	Meteorological Assistant, Upper Air Observatory, near Commissioner's Office, Chatham Lines, Allahabad.	Weather, Allahabad.	Allahabad, 426.
Akyab . .	Meteorological Assistant, Upper Air Observatory, Mayo Road, Akyab.	Weather, Akyab.	Akyab, 34.
Rangoon . .	Meteorological Assistant, Upper Air Observatory, Mingaladon, Rangoon.	Aero, Rangoon.	Govt. 6374.
	Observing Stations.		
Chittagong .	Observer-in-charge, Upper Air Observatory, Chittagong.	Aero Chittagong	Chittagong 177.
Sandoway . .	Observer-in-charge, Upper Air Observatory, Sandoway.	Weather, Sandoway.	Sandoway, 5.
Bassein . .	Meteorological Observer, Civil Hospital, Bassein, Burma.	Weather, Bassein Burma.	Bassein, 2.
Tavoy . .	Observer-in-charge, Upper Air Observatory, Tavoy.	Weather, Tavoy	..
Victoria Point .	Observer-in-charge, Upper Air Observatory, Victoria Point.	Weather, Victoria Point.	Nil.

TABLE XII.

Times of Wireless Distribution of Weather Messages on trans-India Air route.

Nature of Report.	Code word.	Stations.	Times of distribution. I. S. T.	Times of distribution. (G. M. T.)	Remarks.
Forecasts	NEWSMET	Karachi	13·15—13·45 and 21·45—22·15	(0745—0815) and (1615—1645)	See sections (*i*) and (*ii*) of paragraph 3, also paragraphs 11—15 and Tables IV and V.
	NEWSMET	Calcutta	12·30—13·00 and 21·15—21·45	(0700—0730) and (1545—1615)	The times of transmission of NEWSMET messages from Calcutta to Allahabad only are the same as those shewn against Karachi in the line above.
	STORMET	Karachi or	As necessity arises		See sections (*ii*) and (*ix*) of paragraph 3, also paragraph 16 and Tables IV and V.
	RECTIF NEWSMET	Calcutta			
Upper Winds	PILOT	Between Karachi and Calcutta.	0500—0530 1115—1145 and 16·15—16·45	(2330—2400) (0545—0615) and (1045—1115)	See paragraphs 17 to 22 and Tables VI, VII and VIII.
		Between Calcutta and Victoria Point.	08·00—08·30* and 16·45—17·15	(0230—0300)* and (1115—1145)	Ditto.
Routine Local Current Weather Reports.	MET	Between Karachi and Calcutta.	0500—0530 13·15—13·45 and 1615—1645	(2330—2400) (0745—0815) and (1045—1115.)	See paragraphs 25 to 42 and Table IX.
		Between Calcutta and Victoria Point.	08·00—08·30* and 12·30—13·00	(0230—0300)* and (0700—0730)	Ditto.
Special Current Weather Reports.	SPEMET	Any station	As necessity arises.		Ditto.
Warnings of dangerous phenomena and improvements.	DANMET and IMPMET				
Special low clouds reports.	QBB	Ditto.	Ditto		See paragraph 24.

*The morning times will be one hour earlier in each case between 1st April and 30th September inclusive.

APPENDIX I.

Detailed specification of NEWSMET messages.

A NEWSMET message generally consists of two parts, *viz.* (*i*) a weather report and (*ii*) a forecast.

(*i*) The weather report contains information about—

(*a*) *Past weather* : a brief statement of recent rain (or snow) already fallen on the route.

(*b*) *Present weather* : a brief statement of the general weather situation along the route, particularly when weather is disturbed or when a depression or storm is affecting or is likely to affect the route. Terms 'light', 'moderate' and 'heavy' when used to qualify rainfall (or snowfall) will mean precipitation up to 1", between 1" and 2" and over 2" respectively.

(*ii*) The forecast refers to the following elements, in the order in which they are noted below :—

(*a*) *Amount of cloud*, generally with reference to low cloud, but occasionally also with reference to Alto cloud. The sentence giving this information generally begins with the word "*sky*" or "*cloud*" ; the amounts will be given in tenths, if sky expected to be covered, but the following terms may also be used—"lightly clouded", "partly clouded", "mostly clouded" and "overcast" with the meaning 1-3 tenths, 4-6 tenths, 7-8 tenths and 9-10 tenths covered respectively. Probable ceiling height will be given whenever possible.

(*b*) *Expected special weather phenomena* such as thunderstorm, duststorms, squalls, rain or hail, etc., with intensity, whenever possible, will be indicated in general terms.

(*c*) *Visibility* : generally in km., *e.g.*, 2/4 km., 4/10 km., etc. Expressions such as good, fair or moderate, poor and bad, if used, will denote visibilities 7-9, 6, 4-5 and less than 4 respectively of the visibility code. The sentence speaking of visibility begins with the indication "*Vis.*". Phenomena like mist, haze, fog, dust-haze and dust-storm affecting visibility are mentioned under "visibility". The deterioration of visibility during precipitation below the specified value should be taken for granted if precipitation also is forecasted in the message concerned. Special mention of such deterioration under visibility will not be made.

(*d*) *Ground wind*, in 8 directions of the compass, near the landing grounds. The sentence giving information regarding ground winds begins with the words "*ground wind*". The terms light, moderate, strong and gale when used will refer to velocities of about 0-12 kms. per hour, 13-35 kms. per hour, 36-54 kms. per hour and over 54 kms. per hour respectively. When the wind direction is or is expected to be changeable the fact is indicated by the word "Variable". Information regarding the gustiness of ground wind is given, if possible.

(*e*) *Upper winds* : Up to 4 kms. above mean sea level. The sentence giving information about upper winds will begin with the words "*upper winds*". The direction is given in 8 points of the compass and speed in kilometres per hour (km./h) within a range of 10 km/h for light to moderate winds (and 20 km./h for stronger winds), *e.g.*, 15/25 km./h, 30/40 km./h, etc. The words "light", "moderate", "strong" and "gale", *if used*, will have the same significance with regard to velocities as described above for ground winds ; when "gale" is mentioned, its probable strength would be indicated whenever possible. When the wind direction is or is expected to be changeable, the fact is indicated by the word "*variable*". The heights to which the wind specified refers are usually mentioned, but if no height is mentioned, the conditions should be taken to refer to all heights up to 4 kms. Similarly, if no special part of the route is mentioned, the conditions should be taken to refer to the whole route. Gustiness in upper winds is not generally mentioned but it may be indicated if extraordinary gustiness for the day and time of the year prevails or is expected to prevail. The statement regarding upper winds applies not merely to the particular station that may be named in the report but to its neighbourhood as well.

2. In view of the fact that pilot reports representing the early morning, the forenoon and afternoon conditions in respect of the route, Karachi to Calcutta, will be broadcast thrice daily, the NEWSMETs in respect of this portion of the Trans-India route will ordinarily give no information regarding upper winds, except when it is intended to invite attention to special peculiarities in the upper winds due to weather disturbances, or to extraordinary gustiness. Details of upper winds in respect of other portions of the Trans-India route will be given in the NEWSMETs only when (*i*) considerable changes from what the latest balloon ascent indicated are foreseen or (*ii*) when no change is expected but the general trend of direction and speed can be succinctly summarised in general terms of height and locality. If the changes of direction and speed with height and place are complicated and the description is more difficult to assimilate than the actual data, the NEWSMET will indicate that the pilot should refer to the latest pilot balloon message. The NEWSMETs apply to areas of width at least 50 miles on either side of the direct air route between the end stations concerned. It should also be noted that in the case of the Karachi-Victoria Point route, the forecasts apply in both directions between end stations; for example, the forecast for the Karachi-Jodhpur section holds for flights from Karachi to Jodhpur and also for those from Jodhpur to Karachi.

3. It should be realised by airmen that no forecast of the average conditions of upper winds during a period can hold over regions of the route where thundery conditions are developing. There a new local circulation is developing with squally weather and great local effect on the upper as well as surface winds. Any upper winds forecasted are therefore averages for the period of the forecast outside the regions where thundery conditions are developing or have developed.

4. The text of the message is in plain language. Commonly accepted or self-explanatory abbreviations for words that commonly occur in them are however used. For example *vis* for visibility, *Cu* for cumulus cloud, *St* for stratus cloud, *Ns* for nimbostratus cloud, *Cb* for cumulo-nimbus cloud, *mod* for moderate, *thundst* for thunderstorm, 25/35 for 25 to 35, km./h for kilometres per hour, etc.

APPENDIX II.

*Aviation Weather Codes.

I.—Symbolic Form of Codes.

1. **Pilot Code** for reporting upper winds to pilots and to neighbouring W/T stations for the use of aviators.

PILOT IIIGG $\mathbf{H_1ddv_1v_1}$ $\mathbf{H_1ddv_1v_1}$ $\mathbf{H_1ddv_1v_1}$.....

One group $\mathbf{H_1ddv_1v_1}$ is used for each height.

2. **Met Code** for reporting current weather to pilots or to neighbouring W/T stations.

$\dfrac{\textbf{MET}}{\textbf{SPEMET}}$ **Name of station GGgg** $\mathbf{wwVhN_h}$ **DDFWN,**

the indication **MET** being prefixed in the case of routine reports and **SPEMET** in the case of observations taken on special requisition by aircraft.

3. **DANMET** Code for warnings to aircraft of (*a*) dangerous phenomena and (*b*) improvements of weather.

$\dfrac{\textbf{DANMET}}{\textbf{IMPMET}}$ **Name of station** $\mathbf{w_2GGgg}$ $\mathbf{wwVhN_h}$ **DDFWN**

the relevant one of the two indications **DANMET/IMPMET** being used.

4. Corrections to any of the above reports when issued will be preceded by the Code Word, **RECTIF** which will be followed by the usual groups, including the relevant indication like **PILOT, MET**, etc., as the case may be.

II.—Meanings of the Symbols.

DD=Direction from which the wind blows near the ground on the scale 00-32 in which 00=Calm, 08—East, 16=South, etc.; 33 and 67 are added to the wind direction to indicate gales (unusual gustiness) and squall (or line squall), respectively, experienced within one hour of the time of observation.

dd=Direction from which upper wind blows on the scale 01-36, *i.e.*, degrees from North divided by 10 and rounded off to the nearest whole number (00=calm). 50 should be added to the direction if the speed is greater than 99 km./hr.

F=Force of the wind on the Beaufort Scale. Forces above 9 are reported as 9 in telegrams, with the actual force added in plain language at the end of the telegram, *e.g.*, force 10 is reported as "Gale ten", force 11 as "Storm eleven" and force 12 as "Hurricane twelve". (*See Code I.*)

GGgg=Greenwich Mean Time (**GG**=Hrs. and **gg**=mins. of observation) (0100=1 A.M., 1200=NOON, 1315=1.15 P.M., 2400=Midnight, as at Greenwich).

Note.—Time is given in Greenwich Mean Time even from stations where local or any other Standard Time may usually be maintained.

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*A separately published book and card entitled "Aviation Weather Codes, 1937" and Aviation Weather Codes "Pocket Card, 1937" contain all essential information which an airman will need from time to time. Every airman flying trans-India is recommended to keep a copy of each of these publications.

h=Height above ground of base of cloud. (*See Code 2.*)

When there are low clouds, the height of these is indicated by " **h** ". If there are no low clouds and if the base of medium clouds is less than 2,500 metres the height of these latter clouds is indicated by " **h** "

If however there are only fragments of low clouds below more extended clouds whose base is less than 2,500 metres, the observations relative to the more extended layer are given by " **h** "

$\mathbf{H_1}$=Height at which upper wind is reported. (*See Code 3*).

III=Index Number of station (*See page 53*).

N=Total amount of sky covered with cloud (of all forms, high, medium or low). (*See Code 4*).

$\mathbf{N_h}$=Amount of sky covered with cloud the height of which is indicated by " h ". (*See Code 4*).

V=Horizontal visibility or distance at which objects can be seen in daylight (or at which lights can be seen at night). (*See Code 5*).

$\mathbf{v_1\ v_1}$=The speed of the wind in the upper air in kilometres per hour. For values greater than 99 the last two figures only are used and 50 added to the number indicating wind direction dd.

W=Weather in the interval preceding time of observation (*See Code* 6). For MET, SPEMET, DANMET and IMPMET observations this interval is 6 hours.

ww=The actual weather at the time of observation together with the general character of the weather during the preceding 1 hour. (*See Code 7*).

$\mathbf{w_2}$=Indication of the element forming the principal object of a warning of dangerous phenomena or a report of improvement of weather. (*See Code 8*).

X=Observations missing. If one or more figures of a group cannot be given owing to lack of observation or failure of, or damage to, instruments, the missing figures should be replaced by the letter **X** provided no other directions are given in the Codes.

III.—SPECIFICATIONS OF THE CODES.

CODE 1.

F.—*Wind force on the Beaufort scale.*

Code figure.	Beaufort No.	Description of Wind.	Limits of speed.		Specification of scale to be used when anemometer is out of order.
			Miles per hour.	Km. per hour	
0	0	Calm . . .	0—1	0—1	Calm; smoke rises vertically.
1	1	Light air . .	2—3	2—6	Direction of wind shown by smoke drift, but not by wind vanes.
2	2	Light breeze . .	4—7	7—12	Wind felt on face; leaves rustle; ordinary vane moved by wind.
3	3	Gentle breeze .	8—11	13—18	Leaves and small twigs in constant motion; wind extends light flag.
4	4	Moderate breeze .	12—16	19—26	Raises dust and loose paper; moves small branches.
5	5	Fresh breeze . .	17—21	27—35	Small trees in leaf begin to sway; crested wavelets form on inland waters.
	6	Strong breeze .	22—27	36—44	Whistling heard in telegraph wires; umbrellas used with difficulty; large branches in motion.
7	7	Moderate gale .	28—33	45—54	Whole trees in motion; inconvenience felt when walking against wind.
8	8	Fresh gale . .	34—40	55—65	Breaks twigs off trees; generally impedes progress; difficulty experienced in walking against wind.
9	9	Strong gale . .	41—48	66—77	Slight structural damage occurs especially to chimney pots and slates removed.
	10	Whole gale . .	49—56	78—90	Seldom experienced inland; trees uprooted, considerable structural damage occurs.
9	11	Storm . . .	57—65	91—104	Very rarely experienced; accompanied by widespread damage.
	12	Hurricane . .	Above 65	Above 104	......

Notes.—1. Forces above 9 are reported as 9 in telegrams, with the actual force added in plain language at the end of the telegram, *e.g.*, force 10 is reported as "Gale ten"; force 11 as "Storm eleven" and force 12 as "Hurricane 12".

2. If the anemometer is out of order, estimate the wind force in accordance with the specification in the last column above.

CODE 2.

h—*Height of base of cloud above ground.*

Code figure.	Height of clouds above the station.
0	0 to 49 m.
1	50 to 99 m.
2	100 to 199 m.
3	200 to 299 m.
4	300 to 599 m.
5	600 to 999 m.
6	1,000 to 1,499 m.
7	1,500 to 1,999 m.
8	2,000 to 2,500 m.
9	No cloud below 2,500 metres.

Notes.—1. When there is low cloud, the height of the low cloud is indicated by 'h'. If there is no low cloud, and the base of the medium cloud, if any, is less than 2,500 metres, the height of this latter cloud is reported by 'h'.

2. If there are only fragments of low cloud below more extended clouds whose base is less than 2,500 metres, the observations relative to the extended layer are given by 'h'.

3. If however there are no low clouds except fragments, the height of these fragments will be given by 'h'.

4. If, there is fog and the sky is not descernible through it, 'h' should be reported as O and 'N_h' as 9.

CODE 3.

H_1—*Height to which wind refers.*

Code figure.	Metres above sea-level.	For heights above 6,000 metres the figures are taken with the following meaning.	
		Code figure.	Metres above sea-level.
1	200	0	7,000
2	500	1	8,000
3	1,000	2	9,000
4	1,500	3	10,000
5	2,000	4	11,000
6	3,000	5	12,000
7	4,000	6	13,000
8	5,000	7	14,000
9	6,000	8	15,000
		9	16,000

Note.—If information at any height is not available the whole group will be omitted.

CODE 4.

N—*Total amount of sky covered with cloud (of all forms, high, medium or low).*

N_h—*Amount of sky covered with cloud the height of which is reported by 'h'.*

Code figure.	Amount of sky covered with cloud (in tenths).
0	0
1	Trace.
2	1
3	2-3
4	4, 5, 6
5	7-8
6	9
7	More than 9 but with openings.
8	10
9	Sky obscured by fog, duststorm or other phenomenon.

Notes.—1. The figure 0 of the code will be used only when there is no cloud in the sky. The figure 8 of the code will be used only when the sky is completely covered by cloud, no trace of clear sky being visible.

2. If the clear sky or the stars are seen through the fog or mist without the least trace of cloud above the fog or mist being observed, the amount of cloud will be reported as 0. If clouds are observed through the fog or mist, the amount of cloud will be estimated as nearly as possible and the observation of the clouds will be made as if there were no fog.

3. If there is fog, dust, duststorm or similar phenomenon and the sky is not discernible through it, 'N_h' (and N) will be reported as 9 and 'h' as 0.

CODE 5.

V—*Horizontal Visibility.*

Code figure.	Day light observations.	Night observations (provisional) Distances rendering 100 candle power lamp invisible.
0	Objects not visible at 50 metres (55 yards).	100 metres.
1	Objects visible at 50 metres but not at 200 metres (220 yards).	330 „
2	Objects visible at 200 metres but not at 500 metres (550 yards) .	740 „
3	Objects visible at 500 metres but not at 1,000 metres (1,100 yards)	1,340 „
4	Objects visible at 1,000 metres but not at 2,000 metres (1¼ miles)	2,300 „
5	Objects visible at 2,000 metres but not at 4,000 metres (2½ miles)	4,000 „
6	Objects visible at 4,000 metres but not at 10,000 metres (6¼ miles).	7,500 „
7	Objects visible at 10,000 metres but not at 20,000 metres (12½ miles)	12,000 „
8	Objects visible at 20,000 metres but not at 50,000 metres (31 miles).	At greater distances 100 c.p. lamp unsuitable.
9	Objects visible at 50,000 metres but not at 150,000 metres (90 miles)	
—	Objects visible at 150,000 metres or more	

CODE 6.

W—*Weather in the 6 hours preceding the time of observations.*

Code figure.	Past weather.
0	Fair (clear or slightly clouded).
1	Variable sky.
2	Mainly overcast.
3	Sandstorm, duststorm or storm of drifting snow.
4	Fog or thick dust haze (visibility less than 1,000 metres or 1,100 yards).
5	Drizzle.
6	Rain.
7	Snow or sleet.
8	Showers.
9	Thunderstorm.

Notes.—1. If the showers or thunderstorm indicated by the figures 8 and 9 of the Code are accompanied with hail, the word "hail" is added at the end of the message.

2. Whenever there is a thunderstorm, *i.e.*, thunder heard during the pas 6 hours, code figure 9 is reported.

3. In the case of a sandstorm or duststorm at temperatures below 32°F (0°C.) the word "sandstorm" or "duststorm" is added at the end of the message.

CODE 7.

ww—*Weather at time of observation and general character of weather during the preceding one hour.*

Code figure.		
00-19	**Brief description of sky and special phenomena.**	
00	Cloudless.	
01	Partly cloudy.	
02	Cloudy.	
03	Overcast.	
04	Low fog, whether on land or at sea.	
05	Haze (but visibility greater than 2,000 metres or 1¼ miles).	
06	Dust devils seen.	
07	Distant lightning.	
08	Mist (visibility between 1,000 and 2,000 metres) (1,100 yards and 1¼ miles).	
09	Fog at a distance but not at the station.	
10	Precipitation within sight.	
11	Thunder without precipitation at the station.	
12	Dust or sand storm visible but not at the station. (Visibility at the observatory greater than 1,000 metres or 1,100 yards).	
13	Ugly, threatening sky.	
14	Squally weather.	
15	Heavy squalls	in last 3 hours.
16	Waterspouts seen	
17	——	
18	——	
19	——	
20-29	**Precipitation in last hour but not at time of observation.**	
20	Precipitation (rain, drizzle, hail, snow or sleet).	
21	Drizzle	other than showers.
22	Rain	
23	Snow	
24	Sleet	
25	Rain shower(s).	
26	Snow shower(s).	
27	Hail or rain and hail shower(s).	

Code figure.		
28	Slight thunderstorm.	
29	Heavy thunderstorm.	
30-39	**Dust storms or storms of drifting snow (visibility less than 1,000 metres or 1,100 yards).**	
30	Dust or sand storm.	
31	Dust or sand storm has decreased.	
32	Dust or sand storm, no appreciable change.	
33	Dust or sand storm has increased.	
34	Line of dust storms.	
35	Storm of drifting snow.	
36	Slight storm of drifting snow	generally low.
37	Heavy storm of drifting snow	
38	Slight storm of drifting snow	generally high.
39	Heavy storm of drifting snow	
40-49	**Fog or thick dust haze (visibility less than 1,000 metres or 1,100 yards).**	
40	Fog.	
41	Moderate fog in last hour	but no fog at time of observation.
42	Thick fog in last hour	
43	Fog, sky discernible	has become thinner during last hour.
44	,, sky not discernible	
45	,, sky discernible	no appreciable change during last hour.
46	,, sky not discernible	
47	,, sky discernible	has commenced or become thicker during last hour.
48	,, sky not discernible	
49	,, in patches.	
50-99	**Precipitation at time of observation.**	
50-59	**Drizzle (precipitation consisting of numerous minute drops).**	
50	Drizzle.	
51	Intermittent	slight drizzle.
52	Continuous	
53	Intermittent	moderate drizzle.
54	Continuous	
55	Intermittent	thick drizzle.
56	Continuous	
57	Drizzle and fog.	
58	Slight or moderate	drizzle and rain.
59	Thick	
60-69	**Rain.**	
60	Rain.	
61	Intermittent	slight rain.
62	Continuous	

Code figure.		
63	Intermittent	moderate rain.
64	Continuous	
65	Intermittent	heavy rain.
66	Continuous	
67	Rain and fog.	
68	Slight or moderate	rain and snow.
69	Heavy	
70-79	**Snow.**	
70	Snow or sleet.	
71	Intermittent	slight snow in flakes.
72	Continuous	
73	Intermittent	moderate snow in flakes.
74	Continuous	
75	Intermittent	heavy snow in flakes.
76	Continuous	
77	Snow and fog.	
78	Frozen drizzle Granular snow.	
79	Ice crystals.	
80-89	**Shower(s).**	
80	Shower(s).	
81	,, of slight or moderate	rain.
82	,, of heavy	
83	,, of slight or moderate	snow.
84	,, of heavy	
85	,, of slight or moderate	rain and snow.
86	,, of heavy	
87	,, of granular snow.	
88	,, of slight or modrate	hail, or rain and hail.
89	,, of heavy	
90-99	**Thunderstorm with precipitation at time of observation.**	
90	Thunderstorm.	
91	Rain at time	with thunderstorm during last hour, but not at time of observation.
92	Snow or sleet at time	
93	Thunderstorm, slight, without hail or soft hail, but with rain (or snow).	at time of observation.
94	Thunderstorm, slight, with soft hail.	
95	Thunderstorm, moderate, without hail but with rain (or snow).	
96	Thunderstorm, moderate, with soft hail	
97	Thunderstorm, heavy, without hail, but with rain (or snow).	
98	Thunderstorm, combined with duststorm.	
99	Thunderstorm, heavy, with hail	

Notes.—1. In selecting the number for 'ww' no account is to be taken of phenomena which occurred more than 1 hour before the time of observation (except in the cases of code figures 15 and 16), but only of phenomena which occurred during the interval of 1 hour preceding the stated hour of observation and those which occur actually at the time of observation.

2. In general the highest number of the code which applies to the weather of the station will be used.

3. Figures 20—29 will never be used when there is precipitation actually falling at the time of observation.

4. Decade 40—49 applies to fog, dustfog and thick dusthaze.

5. Figures 80—89 will only be used when the precipitation is of the shower type, and when precipitation is actually falling at the time of observation. The clouds which give showers are isolated clouds, and the showers are therefore always of short duration. Between the showers there is a definite clearance unless stratiform clouds are filling the interstices between the shower clouds.

6. The word intermittent will be used whenever the precipitation has not been continuous during the last hour but has occurred at intervals.

7. The state of the sky is normally reported in the cloud code, and not in this code for present weather.

8. The observers are to use, as far as possible, figures other than 30, 35, 40, 50, 60, 70, 80, 90. These eight specifications have been introduced in the code for certain exceptional cases and their use should be restricted to such exceptional cases.

CODE 8.

W_2—*Indication of the element forming the Principal object of a DANMET or IMPMET message.*

Code figure.	
3	Visibility.
4	Low cloud.
5	Precipitation.
6	Wind.
7	Thunderstorm, squall or (Nor'wester).
8	Sand storm or dust storm ; drifting snow.
9	State of sea and of swell. (From seaplane bases only.)

III.—*Index Numbers of pilot balloon stations.*

Index No.	Station.	Index No.	Station.	Index No.	Station.
307	Sharjah . . .	448	Gaya . . .	507	Ahmedabad.
308	Bahrein . . .	450	Patna . . .	511	Malegaon.
343	Gwadur . . .	460	Alipore (Calcutta) .	520	Bombay.
350	Quetta . . .	464	Chittagong . .	525	Bangalore.
355	Peshawar . . .	465	Dacca . . .	528	Mangalore.
364	Lahore . . .	471	Tezpur . . .	531	Trivandrum.
369	New Delhi . .	479	Mandalay . .	537	Trichinopoly.
381	Drigh Road (Karachi)	483	Akyab . . .	540	Madras.
385	Jacobabad . .	486	Sandoway . .	545	Bellary.
387	Jodhpur . . .	490	Rangoon . .	551	Waltair (Vizagapatam).
400	Agra . . .	492	Tavoy . . .	560	Begumpet (Hyderabad, Deccan).
410	Allahabad . .	494	Victoria Point . .		
425	Jubbulpore . .	498	Port Blair . .		
439	Sambalpur . .	500	Poona . . .		

APPENDIX III.

Summary of criteria determining the issue of DANMET and IMPMET messages.

Code figure for w_2.	Object of warning.	DANMET.	IMPMET.
3	Fog or bad visibility	When visibility is less than 1,000 metres on account of fog or other phenomenon-precipitation, sand or duststorm, etc., not being itself the subject of a special warning.	Visibility improved and remained greater than 2,000 metres for at least 10 minutes.
4	Low cloud . . .	When the height of the base of the lowest cloud decreases and falls below 200 metres *and* the total amount of sky covered with low clouds becomes more than three-quarters.	Cloud base risen and remained higher than 300 metres for at least 10 minutes *or* cloud amount has become less than 7/10ths for 10 minutes.
5	Precipitation† .	Heavily raining, *i.e.*, at the rate of 2 inches per hour (or snowing) for at least 10 minutes.	Cessation of heavy rain (or snow) for at least 10 minutes.
6	Wind . . .	Wind force becomes 7 or more for at least half an hour.	Wind force dropped to 5 or less and remained so for 10 minutes.
7	(*a*) Thunderstorm or Nor'wester.	Thunderstorm or Nor'wester occurs *at station* or at such a distance from the station that the direction of motion thereof observable definitely from station.	Thunderstorm, Nor'wester or squall ceased.
	(*b*) Squall . .	A definite squall passes over station.*	
8	(*a*) Sand or Duststorm.	Sand or duststorm (wind force 6 or more and visibility less than 1,000 metres) at station or at such a distance from the station that its direction of motion can be observed from station with certainty.	Wind force dropped to 4 or less, *or* visibility improved to greater than 2,000 metres, and remained so for at least 10 minutes.

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* The phenomenon of unusual gustiness, *i.e.*, gustiness of such magnitude that the difference between the velocity in gusts and lulls is much greater than usual at the station for winds from that direction, must not be confused with the isolated definite squalls. These usually occur at most once or twice an hour, and in most cases occur with Cb. or are caused by incursions of cold air (cold fronts, line squalls). Squalls manifest themselves as isolated and rather prominent singularities, simultaneously, in the curves of pressure, temperature and humidity.

† When precipitation is accompanied by phenomena characteristic of squall or thunderstorm, figure 7 should be reported by w_2.

Code figure for w_2.	Object of warning.	DANMET.	IMPMET.
	(*b*) Drifting snow *	When drifting snow occurs at the station or at such a distance that the phenomenon can be observed with certainty.	When the phenomenon has ceased for at least 10 minutes.
9	Sea and/or swell † .	When the sea becomes rough or of a higher disturbed state and/or swell is heavy; the actual state of sea and/or swell is added in plain language at the end of the groups of the DANMET message from sea-plane bases.	When the sea has gone down to moderate or a lower disturbed state and/or swell decreased to moderate or less the actual state of the sea and/or swell is added at the end of the groups of the IMPMET message from sea-plane bases.

NOTE.—If an aircraft in flight when approaching, and about to land at, an aerodrome receives a DANMET message, the pilot may, if he so desires, call for a SPEMET from the aerodrome before landing, in order to find out whether the conditions at the aerodrome have improved (or deteriorated) since the issue of the DANMET. This procedure is necessary because although since the issue of the DANMET the conditions may have improved, yet, owing to the 10 minutes period prescribed in column 4 above not having elapsed, the IMPMET message would not be issued.

* Drifting snow never occurs in the trans-India air route from Karachi to Victoria Point.

† From sea-plane bases only.

APPENDIX IV.

LATEST CURRENT WEATHER REPORT.*

Name of receiving station........

Serial No.	Date.	† Kind of report.	Names of reporting stations.				Remarks.

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* To be maintained at the wireless stations at Chittagong, Sandoway, Bassein, Tavoy and Victoria Point only.

† *i.e.*, MET, SPEMET, DANMET or IMPMET.

APPENDIX V.

INDIA METEOROLOGICAL DEPARTMENT.

Aviation Weather Bulletin.

MET, SPEMET, DANMET AND IMPMET REPORTS.

Code.—wwVhN$_h$ DDFWN.

Station.	Date.	Time in G.M.T.	Type of report.	Present weather Remarks. ww	Visibility. V	Cloud.		Wind on ground.		Past weather. W	Total Amount of cloud. N	Remarks.
						Height. h	Amount. N_h	Direction (wind coming from) DD	Force on Beaufort Scale. F			

PILOT AND RECTIF PILOT REPORTS.

(Velocity in km./hr., direction in degrees from North and heights in metres above sea-level.)

Station.	Date.	Time in G.M.T.	200.		500.		1000.		1500.		2000.		3000.		4000.		Remarks.
			dd	v_1v_1	dd	v_1v_1	dd	v_1v_1	dd	v_1v_1	dd	v_1v_1	dd	v_1v_1	dd	v_1v_1	

AERMET AND QBB REPORTS.

Code.—hhhh (Time) wwVhN$_h$ ddv$_1$v$_1$.

Station.	Date.	Time in G.M.T.	Height. hhhh	Present weather Remarks. ww	Visibilit. V	Cloud.		Direction. dd	Force in Km/h. v_1v_1	Remarks.
						Height. h	Amount. N_h			

APPENDIX VI.

INDIA METEOROLOGICAL DEPARTMENT.

Forecasts for Aviation.

Region or Air Route

Date exhibited 193 .

Forecast prepared at Meteorological Office at	Date and time of observation used.	Date and time of termination of period covered by forecast.	Text of forecast.

Time standard employed—Greenwich Mean Time.

APPENDIX VII.

Extracts from the revised Q Code relating to meteorology and meteorological advice during flight.

Abbreviation.	Question.	Answer or advice.
	(4) THE OPERATION OF AIRCRAFT.	
	(b) Air Navigation (General).	
QBF	Are you flying in the clouds?	I am flying in the clouds.
QBG	Are you flying above the clouds?	I am flying above the clouds. (When transmitted by a ground station in the United Kingdom has the meaning "Fly above the clouds".)
QBH	Are you flying below the clouds?	I am flying below the clouds. (When transmitted by a ground station in the United Kingdom has the meaning "Fly below the clouds".)
QDT	....	I am flying in a horizontal visibility of more than 1,000 metres and at a height of ...... metres above sea level.
QDV	....	I am flying in a horizontal visibility of less than 1,000 metres and at a height of ...... metres above sea level.
QTH	What is your position in latitude and longitude (or by any other way of showing it)?	My position is ...... latitude .... longitude (or by any other way of showing it).
	(2) THE RADIO SERVICE.	
	(d) Interference and other defects.	
QRN	Are you troubled by atmospherics?	I am troubled by atmospherics.
	(e) Meteorology and meteorological advice during flight.	
QAN	Can you give me the latest meteorological weather report for .... (place of observation)?	Here is the latest meteorological weather report for............ (place of observation).
QAN	Can you give me the latest meteorological report concerning surface wind for .... (place of observation)?	Here is the latest meteorological report concerning surface wind for .... (place of observation).
QAO	Can you give me the latest meteorological report concerning upper wind for ...... (place of observation)?	Here is the latest meteorological report concerning upper wind for............ (place of observation).
QBA	What is the visibility at .... (place)?	The visibility at .... (place) is .... (metres).

Abbreviation.	Question.	Answer or Advice.
QBB	What is the height of base of low cloud at .... (place) ?	The height of base of low cloud at .... (place) is .... (metres).
QBJ	What is the height of the top of the clouds ....?	The height of the top of the clouds is .... metres *.
QFA	Can you give me meteorological information regarding the section from .... to .... ?	Here is the meteorological information regarding the section from .... to ....
QFB	Are fresh meteorological observations required ?	Fresh meteorological observations are required.
QFC	Can you give me the upper wind from ..... to ....?	I am giving you the upper wind from .... to ....
QFD	My altimeter was adjusted at .... (aerodrome of departure) at .... (time of departure stating whether G. M. T., C. E. T., etc.). Give me the altimeter correction for .... (name of aerodrome or other place at which the altimeter reading should be correct). Example : QFD ? Brussels 1030 C. E. T. Paris ?	At .... (name of aerodrome or other place where the altimeter reading should be correct) you must : add .... metres to the altimeter reading subtract............ metres from the altimeter reading. Example : QFD Paris add 70 metres.
QFE	Give me the present barometric pressure, not reduced to sea-level at the surface of .... aerodrome (name of aerodrome)†. Example : QFE ? Lyons.	The present barometric pressure, not reduced to sea-level, at the surface of .... aerodrome (name of aerodrome) is .... (mb. or mm.)†. Example : QFE Lyons 973·7.
QFF	What is the actual barometric pressure reduced to sea-level, at .... aerodrome ? (mm. or mb.).	The actual barometric pressure, reduced to sea-level, at .... aerodrome is .... (mm. or mb.).
QFT	At what height and temperature is ice-formation feared ?	The danger of ice-formation exists at a height of .... metres * and temperature of .... degrees.
QFU	....	The danger of ice-formation does not exist at a height of .... metres * and temperature of .... degrees.

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* In the answer the word "sea" means that the height above sea-level is given and the word "ground", that the height above the aerodrome is given. The word "ground" should only be used in the immediate vicinity of the aerodrome at which the aircraft intends to land.

† The actual pressure must be given within 1/10th of a millibar and must be the pressure recorded on the ground. The reading of the mercury barometer should therefore be corrected taking into consideration the instrumental correction, the thermometric correction and the height of the barometer above the surface of the aerodrome.

Abbreviation.	Question.	Answer or advice.
QFY	Can you give me, in short international code, the latest meteorological report for .... ? (place of observation or meteorological station number).	The latest meteorological report for .... in short international code is .... Example: QFY Manchester GGgg IIIC_L C_M .** wwVhN_h DDFWN.
QFZ	Can you give me a weather forecast for the region of .... ? (place of observation or meteorological station number).	Text in plain *** language.
QUB	Can you give me, in this order, information regarding: the visibility, height of clouds, surface wind for.......... (place of observation)?	Here is the information required ....
QUH	Will you give me the present barometric pressure at sea-level ?	The present barometric presure at sea-level is .... (units).

** Example in India: QFY SPEMET (or MET) Akyab GGgg wwVhN_h DDFWN.

*** Text in India will begin QFZ NEWSMET Calcutta-Rangoon, etc.

APPENDIX VIII.

Meteorological Reports from aircraft in flight—AERMET messages.

1. When poor visibility conditions are encountered, this should be reported by means of the groups QDV or QBA as mentioned in *Appendix VII.*

2. When clouds are low, forcing an aircraft to fly in close proximity to the ground (300 metres or less above ground level), the height of the base of the low cloud should be reported by means of the group QBB as given in *Appendix VII.*

3. Whenever messages of the above nature are transmitted, the approximate position of the aircraft should be given by means of the group QTH, followed by the name of an easily recognised place.

4. Further meteorological reports from aircraft in flight may frequently prove of assistance to other aircraft, particularly during the monsoon period or when the weather conditions are difficult for flying. These reports should be transmitted in the following form:

AERMET (position) hhhh GGgg $\mathbf{wwVhN_h}$.

The group **hhhh** represents the height of the aircraft in metres above sea level. The other symbols have their usual meaning as given in Appendix II.

Example.—If an aircraft is flying at height of 500 metres above sea over Chittagong, the message will read:

AERMET Chittagong 0500 GGgg $\mathbf{wwVhN_h}$.

5. When convenient, a further group in the form $\mathbf{ddv_1v_1}$ may be added to the above message to indicate the direction in tens of degrees from North and velocity of the wind in Km./hr. at the height at which the aircraft is flying. This information would be of particular assistance when the aircraft is flying above a layer of cloud which would prevent upper air observations being made from the ground.

6. Information regarding the height of the top of the clouds is also valuable and may be reported by means of the group QBJ (*See Appendix VII*) whenever the aircraft is flying above the clouds.

GIPD—M333DGObsPoona—26-3-37—700